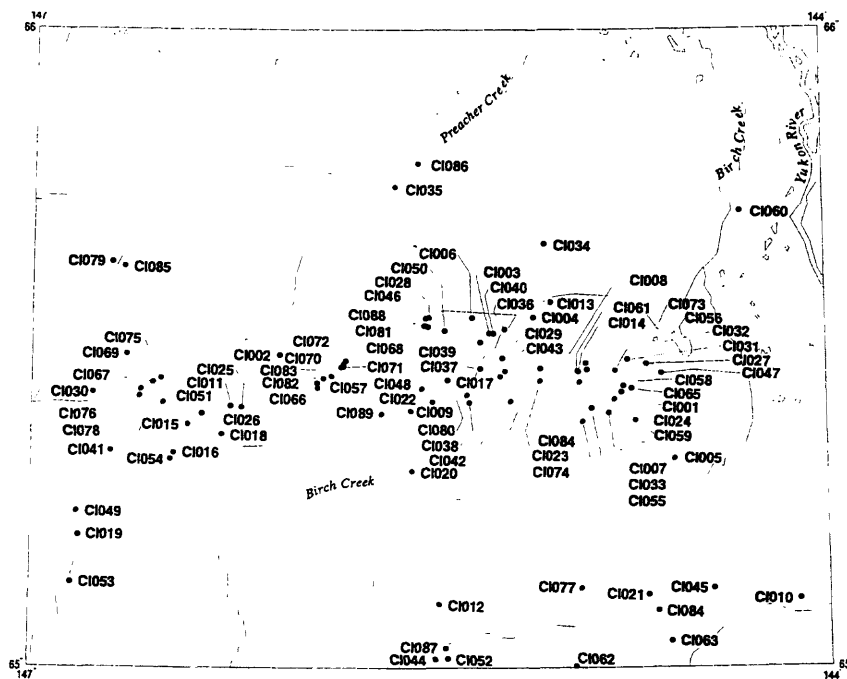


## U.S. Department of the Interior - U.S. Geological Survey

## Circle quadrangle

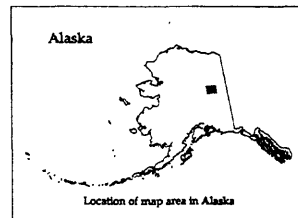
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences throughout Alaska.



*Distribution of mineral occurrences in the  
Circle 1:250,000-scale quadrangle, Alaska*

This and related reports are accessible through the USGS World Wide Web site <http://www-mrs-ak.wr.usgs.gov/ardf>. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to Donald Grybeck, USGS, 4200 University Dr., Anchorage, AK 99508-4667, email [dgrybeck@usgs.gov](mailto:dgrybeck@usgs.gov), telephone (907) 786-7424. This compilation is authored by:

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*This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.*



**Site name(s): 88 Group****Site type:** Occurrence**ARDF no.:** CI001**Latitude:** 65.433**Quadrangle:** CI B-2**Longitude:** 144.762**Location description and accuracy:**

The 88 Group claims can be reached via an 8 mile long dirt road that starts in Circle Hot Springs. The claims are on the Portage Creek side of the divide along Portage Creek road.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

The 88 Group occurrence appears to be a dark mafic intrusive phase contact with a coarse porphyritic granite. Both lode and placer gold is found at these claims (Vetter, 1995).

Wiltse and others (1995) mapped the bedrock in the area and described the Cretaceous granite as a chloritized porphyritic (hornblende) biotite monzogranite to syenogranite. They also mapped a mafic dike in the area of the 88 Group claims which is described as black to dark gray, aphanitic to slightly porphyritic with major plagioclase, augite, hornblende and magnetite.

Gold mineralization occurs within heavily Fe-oxide stained, quartz-filled greisen zones (up to six feet across), within fractures, and in stockwork veining. A significant aspect of the prospect is the large amount of grus development, 10 to 20 feet, that pans considerable gold. Other heavy minerals concentrated in the pans include abundant sphalerite, and small amounts of arsenopyrite, chalcopyrite, cassiterite (?), and monazite (?).

Continuous gold anomalies occur in the vicinity of the 88 Group discovery outcrop along approximately 2000 feet of ditch exposure along the Portage Creek road. The mineralization occurs within heavily Fe-oxide stained, quartz-filled greisen zones of variable width (3 inch average). Phyllic and argillic alteration is present along vein margins and is also controlled by fractures. Strong zinc anomalies (up to 0.5 percent) and moderate arsenic values are present. Tin was not detected in the rock samples, however,

two pan concentrates contain anomalous values. The dominant trend in mineralization is N 50 W with near vertical dips (Bakke,1991).

**Alteration:**

Mineralization occurs within heavily Fe-stained, quartz-filled greisen zones of variable width (3 inch average). Phyllic and argillic alteration is present along vein margins and is also controlled by fractures (Bakke, 1991).

**Age of mineralization:****Deposit model:**

Gold-bearing greisen zones in granite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Exploration was restricted to surface sampling.

**Production notes:****Reserves:****Additional comments:****References:**

Bakke, 1991; Vetter, 1995; Wiltse and others, 1995.

**Primary reference:** Vetter, 1995.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/15/98

**Site name(s): Bachelor Creek****Site type:** Mine**ARDF no.:** CI002**Latitude:** 65.491**Quadrangle:** CI B-5**Longitude:** 146.059**Location description and accuracy:**

Bachelor Creek can be accessed via a 4-wheel drive road from the Steese Highway at mile marker 80.1. The 4-wheel drive road runs along the west side of the state highway maintenance station fence. Mining occurred along the east side of the creek at 65.4828 N, 146.0575 W.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Traverses in the upper Bachelor Creek basin indicate that it is underlain, in part, by light gray or rusty-weathering felsic schists and quartzites and by abundant graphitic schist and quartzite. Sulfide minerals appear to be concentrated in stratiform layers, especially in the graphitic rocks. In some hand specimens, sulfides make up 15 to 20 percent of the rock. Pyrite is the most common sulfide, and chalcopyrite and arsenopyrite are present in many of the rocks. Pyrrhotite is common in the graphitic zones. Both felsic and graphitic schists contain elevated abundances of gold, copper and tungsten. The felsic schists and associated light-colored quartzites contain up to 240 ppb Au, 4300 ppm Cu, 2100 ppm As, 4 ppm Ag, 4.5 ppm Sb, 130 ppm Sb, 14 ppm Pb, 90 ppm Sn and 3100 ppm W. In these rocks gold correlates with copper, and to a lesser extent, with arsenic. High tungsten-tin values inversely correlate to gold-base metal values. Graphitic schists and quartzites are less well mineralized with concentrations of Au to 180 ppb, Cu to 1600 ppm and W to 110 ppm (T.E. Smith and others, 1987, p. 6-10 to 6-11).

Bedrock in the area is composed of both schist and granite porphyry. Bedrock schist is primarily quartz-mica, quartzitic, and carbonaceous. These Paleozoic and (or) Precambrian schists are cut by a 75 foot thick sill-like body of granite porphyry. The schistosity and sill strike N 60 E. Gravels are thin (7 to 8 feet thick) or absent and are thawed. Gravels are composed of schist, abundant vein quartz, and some granite porphyry clasts.

The only gold occurrence reported is on a low, 20 foot thick gravel bench on the east side of the creek (Prindle, 1910, p. 208-209).

Gravel on a low bench east of the stream was sluiced in 1910 (Cobb, 1973, p. 123, [B 1374]). A man recently reported finding a 1.2 ounce gold nugget on Bachelor Creek (Lampright, 1996, p.55).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Gravel on a low bench east of the stream was sluiced in 1910 (Cobb, 1973, p. 123, [B 1374]). A man recently reported finding a 1.2 ounce gold nugget on Bachelor Creek (Lampright, 1996, p.55).

**Production notes:**

Gravel on a low bench east of the stream was sluiced in 1910 (Cobb, 1973, p. 123, [B 1374]), however amount of production is unknown.

**Reserves:**

**Additional comments:**

Gold reported on Preacher Creek in 1913 may have been on Loper or Bachelor Creek. Numerous claims staked on Preacher Creek in 1928 and 1976 to 1981. See also Loper Creek, ARDF no. CI035.

**References:**

Brooks, 1909; Ellsworth, 1910; Prindle, 1910; Ellsworth and Parker, 1911; Prindle and Katz, 1913; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Smith and others, 1987; Lampright, 1996.

**Primary reference:** Smith and others, 1987; Lampright, 1996.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/15/98

**Site name(s):** Bear claims

**Site type:** Prospect

**ARDF no.:** CI003

**Latitude:** 65.525

**Quadrangle:** CI C-3

**Longitude:** 145.264

**Location description and accuracy:**

The Bear claims are located along the Steese Highway centered at about BM 2283, just north of Miller Creek and approximately 1 mile west of Miller House.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The following geologic description is taken from Freeman and others (1988, p. 16): Mineralization in the roadcut of the Steese Highway within the Bear claims consists of massive to disseminated arsenopyrite and lesser pyrite. The sulfide minerals are hosted by a sequence of chloritic greenschist overlain by black calcareous, graphitic schist overlain by micaceous quartzite. The sequence is folded into open folds whose axes plunge gently south with wavelengths of approximately 150 feet and amplitudes of approximately 30 feet. The crests of anticlines are cut by stockwork quartz veins stained by abundant scorodite. The rocks are pervasively oxidized along vertical shear zones which strike N 40 E. The shears contain oblong fragments of highly altered granite which are also mineralized with arsenopyrite and pyrite and are heavily stained with scorodite. A sixty-five foot section of one of the most highly mineralized anticlinal structures was channel sampled at five foot intervals. The maximum gold value for these channel samples is 0.092 ounces per ton, but several others have gold values ranging from 0.012 to 0.017 ounces per ton.

**Alteration:**

Chloritic alteration accompanied by massive to disseminated arsenopyrite and lesser pyrite.

**Age of mineralization:**

**Deposit model:**

Gold-bearing stockwork veins that contain arsenopyrite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** Undetermined

**Site Status:** Inactive

**Workings/exploration:**

Channel sampled in 1988 (Freeman and others, 1988).

**Production notes:****Reserves:****Additional comments:****References:**

Freeman and others, 1988.

**Primary reference:** Freeman and others, 1988.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Bedrock Creek**Site type:** Prospect**ARDF no.:** CI004**Latitude:** 65.55**Quadrangle:** CI C-3**Longitude:** 145.096**Location description and accuracy:**

Location of claims is about 100 yards east of Bedrock Creek and 50 yards upstream of the Steese Highway bridge.

**Commodities:****Main:** U**Other:** Cu, Th, W**Ore minerals:** Malachite, monazite, scheelite**Gangue minerals:****Geologic description:**

Country rock is dominantly Paleozoic and (or) Precambrian Yukon-Tanana terrane quartz-mica schist containing numerous discontinuous quartz veins, intruded by lower Tertiary granite of the Circle pluton. Nelson, West, and Matzko (1954) reported 10% monazite, 5% topaz and a small amount of scheelite in the heavy-mineral fraction of the granite bedrock. Other minerals present are pyrrhotite, garnet, ilmenite, zircon, biotite, topaz and malachite. Two other samples from the area are slightly anomalous in tungsten (2-3 ppm), fluorine (2300-2400 ppm), lead (11-25 ppm), and arsenic (12-24 ppm) (Nelson and others, 1954). Concentrates from gravel on upper Bedrock Creek contain tin and tungsten (Barker, 1979). Fluorometric tests indicated the presence of uranium in several minerals but not in amounts to be of economic interest. A slightly radioactive zone of iron-stained schist 0.5 to 2 feet wide by 8 feet long was staked for uranium. This iron-stained schist gave a radiometric reading of about 0.05 mR/hr while the unstained schist gave a reading of 0.04 mR/hr (Freeman, 1963, p. 32). Work on claims between 1976 and 1978 consisted of surface trenching on the slightly radioactive zone of the iron-stained schist. Bedrock Creek is noted for its absence of gold, even though it is surrounded by gold-producing creeks such as Independence, Mammoth, Crooked and Boulder Creeks (Yeend, 1991, p. 31).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Claims located 100 yards east of the creek were active in 1976 - 1978. Workings consisted of surface trenching of a slightly radioactive zone of iron-stained schist 0.5 to 2 feet wide by 8 feet long. This iron-stained schist gave a radiometric reading of about 0.05 mR/hr while the unstained schist gave a reading of 0.04 mR/hr (Freeman, 1963, p. 32).

**Production notes:**

**Reserves:**

**Additional comments:**

Site of localized radioactive anomaly; low grade and small size. Apparently no potential for uranium of economic importance.

**References:**

Nelson and others, 1954; Freeman, 1963; Berg and Cobb, 1967; Overstreet, 1967; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Barker, 1979; Menzie and others, 1983; Nokleberg and others, 1987; Yeend, 1991.

**Primary reference:** Nelson and others, 1954; Freeman, 1963.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 05/22/98

**Site name(s):** Birch Creek**Site type:** Mine**ARDF no.:** CI005**Latitude:** 65.33**Quadrangle:** CI B-2**Longitude:** 144.568**Location description and accuracy:**

The coordinates are for the Birch Creek/Buckley Bar confluence. The Steese Highway parallels Birch Creek just east of Twelvemile Summit as it flows west from Mastodon Dome. Eventually Birch Creek flows south, east, then north, crossing the Steese Highway again between Central and Circle.

**Commodities:****Main:** Au**Other:** Ag**Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Birch Creek is approximately 560 km long, originating just east of Mastodon Dome and emptying into the Yukon River approximately 50 km below Fort Yukon. Birch Creek flows over quartzite and quartzite schist before crossing into the Tintina fault trench where it then flows within the broad lowlands of the Yukon River over Pleistocene and Holocene surficial deposits. The flood plain of the upper and middle portions of the creek is composed of pebble-to-cobble gravel that contains a few boulders composed primarily of quartz and quartzite. A pebble count of gravel in Birch Creek between the mouth of Gold Dust and Butte Creeks reveals a composition of 72 percent quartzitic schist, 20 percent quartz, and 8 percent schist. Panned concentrates are low in magnetite and ilmenite, and rich in garnet (Yeend, 1991, p. 26).

The only early placer production recorded from Birch Creek was from river bars, of which Buckley Bar was probably the most productive (Ellsworth and Davenport, 1913, p. 213). A bench about a mile below Twelvemile Creek was unsuccessfully mined in 1911 (Cobb, 1976, p. 7). Mining operations using heavy equipment with modern high-volume sluiceboxes were active along the upper part of Birch Creek in the 1980's (Yeend, 1991).

**Alteration:**

**Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes**Site Status:** Inactive**Workings/exploration:**

Other than during the discovery period of the late 1800's, little mining was done on Birch Creek until the 1980's. Mining operations using heavy equipment with modern high-volume sluiceboxes were active along the upper part of Birch Creek in the 1980's (Yeend, 1991). A bench about a mile below Twelvemile Creek was unsuccessfully mined in 1911 (Cobb, 1976, p. 7, [OFR 76-633]).

**Production notes:**

During the spring of 1894, about a half ounce of gold per man per day was being taken from Pitka's Bar (Dunham, 1898). In the 1980's in the upper part of Birch Creek near the Steese Highway, 2,000 cubic yards of gravel per day yielded 0.005 to 0.0075 ounces per cubic yard (Yeend, 1991, p.26, Lampright, 1996, p. 56). Most Birch Creek production has been from river bars with Buckley Bar probably being the most productive (Ellsworth and Davenport, 1913, p. 213). Battest Mining reported mining operations on Birch Creek in 1985 (Bundtzen and others, 1986).

**Reserves:****Additional comments:**

Gold in small quantities can still be panned from just about anywhere along the upper 160 km of Birch Creek (Yeend, 1991, p. 26).

**References:**

Brooks, 1907, B 314; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Brooks and Capps, 1924; Mertie, 1932; Mertie, 1938; Koschman and Bergendahl, 1968; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Yeend, 1985; Bundtzen and others, 1986; Yeend, 1991.

**Primary reference:** Yeend, 1991**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development

Corporation)

**Last report date:** 09/08/98

**Site name(s):** Bonanza Creek

**Site type:** Mine

**ARDF no.:** CI006

**Latitude:** 65.549

**Quadrangle:** CI C-3

**Longitude:** 145.329

**Location description and accuracy:**

Bonanza Creek is a tributary to Porcupine Creek. The site of most placer mine activity extended approximately 1.5 miles upstream from the junction of Bonanza Creek and Porcupine Creek. This site includes both placer mining and mineralized schist.

**Commodities:**

**Main:** Au

**Other:** As, Cu, Zn

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Bonanza Creek, the main tributary of Porcupine Creek, is about 11 km long. Bedrock in the Bonanza Creek drainage is the Lower Schist unit described by Wiltse and others (1995) as a slightly calcareous quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose porphyroblastic-albite-chlorite schist. This Bonanza Creek site includes both placer mining and mineralized schist.

A pebble count of gravel taken 3 km above the mouth of Bonanza Creek, shows a composition of 55 percent quartz-mica schist, 36 percent quartzite, and 9 percent quartz (Yeend, 1991). Zircon, garnet, ilmenite, pyrolusite, pyrrhotite, pyrite, and galena are present in the heavy mineral concentrates (Mertie, 1932). Gravel is 3 to 6 feet thick beneath 2 to 8 feet of muck, with a 75 to 150 feet wide paystreak in the lower valley (Mertie, 1938). Coarse gold, with considerable intergrown quartz, is located on bedrock and in cracks in the top 4 to 5 feet of the bedrock (Mertie, 1938). In the upper part of the creek, 6 feet of gravel lies on weathered bedrock with a pay streak 150 to 200 feet wide (Menzie and others, 1983, p.39). The largest nugget reported here was 1 ounce (Menzie and others, 1983, p.39).

Hydraulic mining with 2-inch nozzles was conducted in the 1930's (Mertie, 1938). Mining in the 1980's was confined to the middle and upper parts of Bonanza Creek. One to two meters of bedrock and one meter of overlying gravel was mined, and in places,

the paystreak was over 60 meters wide. Exploratory drilling in the early 1980's in the gravel in the upstream part of the creek revealed sub-economic values (Yeend, 1991). Gold values in the gravel during the early mining years were 0.0375 to 0.05 ounces per cubic yard. The gold recovered was course and contained nuggets weighing as much as 10 ounces (Mertie, 1938). Fineness of gold varied little over a ten-year mining period (mean is 850 gold, 140 silver) (Mertie, 1938). In 1996, Paul and Company worked pay on Bonanza Creek, and Underwood Mining Co. tested a small paystreak at 114 Mile Steese Highway by washing about 50 cubic yards of gold-bearing gravel (Bundtzen and others, 1996).

Metz (1984) describes stratabound sulfide mineralization in the placer workings on the lower 3.2 km of Bonanza Creek. The mineralized section strikes east-west and dips to the north at 15 to 45 degrees. Channel samples taken at right angles to the compositional layering indicated gold grades of 0.12 ounces per ton over 1.5 meters. Stratabound mineralization

is cut by vertical quartz veinlets that range from less than a centimeter to 15 centimeters wide. The veinlets strike east-west and contain pyrite, arsenopyrite and gold. Gold wires up to 5 millimeters long and gold crystals up to 2 millimeters in diameter occur within vuggy quartz. Gold also occurs as inclusions in the arsenopyrite and along the sulfide grain boundaries (Metz, 1991, p. 108).

Freeman and others (1988), conducted detailed alteration mapping and channel-sampling along lower Bonanza Creek. This mapping revealed sulfide mineralization that is largely restricted to graphitic and calcareous quartzites. Subequal amounts of pyrite and arsenopyrite dominate the sulfide mineralogy, with rare chalcopyrite and sphalerite. Local pale yellow stibiconite indicates the presence of antimony-bearing minerals. Anomalous gold, silver and arsenic were reported in a metatuff unit that included disseminated arsenopyrite and pyrite. The highest gold value reported was 489 ppb.

**Alteration:**

Sulfide mineralization in Bonanza Creek is largely restricted to graphitic and calcareous quartzites. The sample line along lower Bonanza Creek by Freeman and others (1988) indicates that sulfide minerals make up 10% of the rock. Sulfide mineralogy is dominated by subequal amount of pyrite and arsenopyrite with rare chalcopyrite and sphalerite. Sulfide minerals occur as extremely fine-grained disseminations within the foliation of the schists. Late stage quartz veins commonly contain small amounts of pyrite or arsenopyrite. Iron oxides have formed after pyrite and pale green scorodite has formed after arsenopyrite. Local pale yellow stibiconite indicates the presence of antimony-bearing minerals (Freeman and others, 1988).

**Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a), Disseminated and stratiform sulfides in schist; local gold-bearing quartz veinlets.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

Hydraulic mining with 2-inch nozzles was conducted in the 1930's (Mertie, 1938). Mining in the 1980's was confined to the middle and upper parts of Bonanza Creek. One to two meters of bedrock and one meter of overlying gravel were mined, and in places the paystreak was over 60 meters wide. Exploratory drilling in the early 1980's in the gravel in the upstream part of the creek revealed sub-economic values (Yeend, 1991). Gold values in the gravel during the early mining years were 0.0375 to 0.05 ounces per cubic yard. The gold recovered was coarse and contained nuggets weighing as much as 10 ounces (Mertie, 1938). Fineness of gold varied little over a ten-year mining period (mean is 850 gold, 140 silver) (Mertie, 1938). In 1996, Paul and Company worked pay on Bonanza Creek, and Underwood Mining Co. tested a small paystreak at 114 Mile Steese Highway by washing about 50 cubic yards of gold-bearing gravel (Bundtzen and others, 1996).

In 1988, Fairbanks Exploration, Inc., conducted detailed alteration mapping and channel-sampling of the mineralized schist along lower Bonanza Creek (Freeman and others, 1988).

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:****References:**

Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Mertie, 1938; Smith, 1939, B 910-A; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Freeman and others, 1988; Metz, 1991; Yeend, 1991; Bundtzen and others, 1996; Lampright, 1996.

**Primary reference:** Yeend, 1991; Freeman and others, 1988.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)**Last report date:** 09/08/98



**Site name(s):** Bottom Dollar Creek; Nugget Gulch; Greenhorn Creek

**Site type:** Mines

**ARDF no.:** CI007

**Latitude:** 65.401

**Quadrangle:** CI B-2

**Longitude:** 144.811

**Location description and accuracy:**

Coordinates are for the junction of Greenhorn Creek and Bottom Dollar Creek. The location of individual placer operations is unknown, but the entire drainage is covered by placer claims. Bottom Dollar Creek drains into Harrison Creek, which is a tributary of Birch Creek.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Bottom Dollar Creek is about 7 to 8 km long and flows southward into Harrison Creek. The upper 3 km of Bottom Dollar Creek is underlain by Cretaceous chloritized porphyritic biotite monzogranite. Primary trace minerals include zircon, topaz, apatite and ilmenite. In the granite, anomalous gold concentrations are spatially associated with sericite-quartz occurrences (Wiltse and others, 1995). The coarse gravel along the lower part of the creek has been thoroughly mined. A pebble count of creek gravel near the mouth of the creek shows 77 percent quartzite, 13 percent quartz, and 10 percent mica schist (Yeend, 1991). Greenhorn Creek and Nugget Gulch are tributaries of Bottom Dollar Creek.

Small-scale mining on Bottom Dollar Creek was reported in 1909 to 1910, 1912, 1936, and 1938 to 1939, and sluicing occurred in 1975 (Eberlein and others, 1977, p. 18). Some small operations occurred in the 1980's and 1990. Most of the gravels have been processed for gold at least once (Menzie and others, 1983). Colledge Enterprises reported drilling on Bottom Dollar Creek in 1996 (Bundtzen and others, 1996).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Small-scale mining on Bottom Dollar Creek was reported in 1909 to 1910, 1912, 1936, and 1938 to 1939, and sluicing occurred in 1975 (Eberlein and others, 1977, p. 18). Some small operations occurred in the 1980's and 1990. Most of the gravels have been processed for gold at least once (Menzie and others, 1983). Colledge Enterprises reported drilling on Bottom Dollar Creek in 1996 (Bundtzen and others, 1996).

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:**

Greenhorn Creek is a tributary of Bottom Dollar Creek, while Greenhorn Gulch is a tributary of Boulder Creek. Greenhorn Gulch is sometimes referred to as Greenhorn Creek in the literature and may lead to some confusion. Most information reported for Greenhorn Creek probably refers to Greenhorn Gulch, since Greenhorn Gulch was mined more extensively than Greenhorn Creek.

**References:**

Spurr, 1898; Ellsworth and Parker, 1911; Ellsworth and Davenport, 1913; Mertie, 1932; Mertie, 1938; Smith, 1938; Smith, 1939, B 917-A; Smith, 1941; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Bundtzen and others, 1986; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:** Eberlein and others, 1977; Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s):** Boulder Creek

**Site type:** Mine

**ARDF no.:** CI008

**Latitude:** 65.47

**Quadrangle:** CI B-3

**Longitude:** 145.07

**Location description and accuracy:**

The site of the 1929 mining is in sec. 34, T. 8 N., R. 13 E, of the Fairbanks Meridian. Access is poor with no summer roads and only a winter tractor trail.

**Commodities:**

**Main:** Au, Sn

**Other:**

**Ore minerals:** Cassiterite, gold

**Gangue minerals:**

**Geologic description:**

Boulder Creek, a tributary of Crooked Creek, is about 21 km long, and cuts quartzite schist and Tertiary granite before crossing the Hot Springs fault and entering the Tintina fault trench. The Tertiary granite is a light gray biotite monzogranite to syenogranite. Heavy-mineral concentrates from the granite contain 45% allanite, 15% chalcopyrite and smaller amounts of other minerals (Nelson and others, 1954). Fluorimetric tests on several other granite minerals indicated the presence of uranium (Nelson and others, 1954).

A pebble count of the creek gravel north of the Hot Springs fault indicates a composition of 50 percent quartzite, 27 percent quartz-mica schist, 17 percent quartz, and 6 percent granite (Yeend, 1991). Quartz and schist boulders in the creek are generally about 0.5 meters in diameter, and occasional boulders are up to 1 meter (Yeend, 1991). Gold is generally found in the lower 3.5 feet of the 8 feet of bench gravel (Mertie, 1932, p. 250). The valley near past mining operations is about 70 to 100 meters wide, with fan gravel common at the mouths of small side gulches. Miners have reported two types of gold in the gravel: fine, flaky gold and coarse, rough gold with adhering quartz (Yeend, 1991). Mining on the creek was restricted to the 2-km stretch downstream from Greenhorn Gulch (Yeend, 1991). Operations in 1975 closed down due to excessive amounts of cassiterite in sluice boxes (Menzie, 1983, p. 40).

**Alteration:**

**Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

It is uncertain when mining began on Boulder Creek. Hydraulic mining of the bench gravel occurred in the early 1930's with gold being found in the lower 3.5 feet of the 8 feet of bench gravel (Mertie, 1932). Mining on the creek was restricted to the 2-km stretch downstream from Greenhorn Gulch (Yeend, 1991). Operations in 1975 closed down due to excessive amounts of cassiterite in sluice boxes (Menzie, 1983, p. 40).

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:****References:**

Brooks, 1918; Mertie, 1932; Mertie, 1938; Nelson and others, 1954; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Barker, 1979; Menzie and others, 1983; Yeend, 1991.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s): Butte Creek****Site type:** Mines**ARDF no.:** CI009**Latitude:** 65.404**Quadrangle:** CI B-4**Longitude:** 145.562**Location description and accuracy:**

Butte Creek is a tributary to Birch Creek. Butte Creek enters Birch Creek just south of the Steese Highway, approximately 1 mile east of the Bear Creek-Steese Highway junction. The coordinates are for the approximate center of extensive placer mining along the lower 3.2 km of the creek.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

The drainage basin of Butte Creek lies within the Upper Schist unit of Wiltse and others (1995), which they describe as a mixed unit of variably garnetiferous, pelitic quartz-muscovite schist, muscovite-quartz schist, chlorite-quartz muscovite schist, and distinct intervals several tens of meters thick of garnetiferous, calcareous albite-porphyroblastic muscovite-chlorite schist containing interlayered, 3 to 5 cm thick impure marble.

A pebble count of gravel in the lower part of Butte Creek reveals a composition of 43 percent quartzite, 26 percent quartz, 18 percent garnet schist, and 13 percent mica schist. The gravel in Butte Creek is coarse and typically contains boulders of quartz and quartzite as much as 0.5 meters in diameter (Yeend, 1991).

A hydraulic plant was installed in 1916 but operated only a short time because of scarcity of water (Brooks, 1918). Placer mining was reported in 1916, 1937 and perhaps 1932 (Eberlein and others, 1977, p. 19). A dragline excavating plant was operated on the creek in 1937. Weighted mean of all gold mined through 1937 was 900 parts gold and 88 parts silver per thousand (Mertie, 1938). Extensive mining was done in the lower 3.2 km of the creek in the 1980's (Yeend, 1991). The upper parts of the creek are unmined, have steep gradients, and small volumes of gravel (Yeend, 1991).

**Alteration:**

**Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

A hydraulic plant was installed in 1916 but operated only a short time because of scarcity of water (Brooks, 1918). Placer mining was reported in 1916, 1937 and perhaps 1932 (Eberlein and others, 1977, p. 19). A dragline excavating plant was operated on the creek in 1937. Weighted mean of all gold mined through 1937 was 900 parts gold and 88 parts silver per thousand (Mertie, 1938). Extensive mining was done in the lower 3.2 km of the creek in the 1980's (Yeend, 1991). The upper parts of the creek are unmined, have steep gradients, and small volumes of gravel (Yeend, 1991).

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:****References:**

Brooks, 1918; Mertie, 1938; Smith, 1939, B 910-A; Smith, 1934, B 857-A; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Bundtzen and others, 1986; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s):** Cars; Salcha River

**Site type:** Prospect

**ARDF no.:** CI010

**Latitude:** 65.106

**Quadrangle:** CI A-1

**Longitude:** 144.111

**Location description and accuracy:**

The coordinates are for the site of a scheelite-bearing quartz vein in NE1/4 sec. 8, T. 3 N., R. 18 E.

**Commodities:**

**Main:** W

**Other:**

**Ore minerals:** Scheelite

**Gangue minerals:**

**Geologic description:**

Scheelite occurs within a discontinuous idocrase-garnet skarn in interlayered calc-silicate schist and impure marble along a contact with a lower Tertiary granite pluton (Nokleberg and others, 1987, p. 34). The schist and marble are part of the middle Paleozoic or older Yukon-Tanana terrane (Nokleberg and others, 1987, p. 34).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Tungsten Skarn Deposit (Cox and Singer, 1986; model 14a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

14a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples only.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster and others, 1983; Menzie and others, 1983; Bundtzen and others, 1984; Bundtzen and others, 1986; Nokleberg and others, 1987.

**Primary reference:** Nokleberg and others, 1987.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98



**Site name(s):** Charity Creek**Site type:** Mines**ARDF no.:** CI011**Latitude:** 65.412**Quadrangle:** CI B-5**Longitude:** 146.245**Location description and accuracy:**

The location given is the confluence of Homestake and Charity Creeks. The location of individual placer operations is unknown.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Charity Creek drains an area underlain by schist intruded by granite (Eberlein and others, 1977). Gravel is 6 to 8 feet deep with little overburden and the pay streak lies throughout the gravel as well as the upper 2 feet of bedrock (Menzie and others, 1983, p. 40). The richest ground was reported to be worth 10 dollars per cubic yd (gold at \$300 per troy oz) (Menzie and others, 1983, p 40). Placer gold was mined by small-scale methods.

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive

**Workings/exploration:**

Mining occurred in 1979. Small-scale methods only.

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:**

See also Homestake Creek, ARDF no. CI025, and Faith Creek, ARDF no. CI018.

**References:**

Ellsworth, 1910; Prindle and Katz, 1913; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983.

**Primary reference:**

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s):** Clums Fork**Site type:** Prospect**ARDF no.:** CI012**Latitude:** 65.1**Quadrangle:** CI A-3**Longitude:** 145.456**Location description and accuracy:**

The location is along Volcano Creek, a tributary of the Clums Fork, in the SE1/4 SE1/4 sec. 2, T. 3 N., R. 11 E. Clums Fork is a tributary of Birch Creek.

**Commodities:****Main:** Diamond**Other:****Ore minerals:** Diamond**Gangue minerals:****Geologic description:**

Diamonds ranging from 0.10 to 0.98 carats were recovered from placer operations on Volcano Creek, a few hundred feet downslope of the 'Crazy-8' possible lamproite structure. These alluvial diamonds have sharp edges and lack abrasions, which may indicate that they did not travel far from their source. Subsequent investigations revealed G3 and G5 garnets, plus zircons which may indicate a lamproite source (The Mining Record, April 13, 1994).

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

Reverse circulation drilling and trenching occurred in 1993 and 1994 (The Mining Record, July 6, 1994, p. 3).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

The Mining Record, April 13, 1994; The Mining Record, July 6, 1994.

**Primary reference:**

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 07/01/98

**Site name(s): Crooked Creek****Site type:** Mines**ARDF no.:** CI013**Latitude:** 65.573**Quadrangle:** CI C-3**Longitude:** 145.028**Location description and accuracy:**

The location is at the mouth of Sawpit Creek, where mining took place in 1981. Mining in 1952 and 1973 to 1981 was near the mouth of Mammoth Creek and east for several km. Crooked Creek is the drainage below the junction of Porcupine and Mammoth Creeks. It flows 30 km in an easterly direction through the town of Central before joining Birch Creek. The Steese Highway parallels Crooked Creek between the Hot Springs Fault and the town of Central. Placer mining has been confined to the 8 km of the creek immediately downstream from where the Hot Springs fault crosses Crooked Creek (Yeend, 1991, p. 17).

**Commodities:****Main:** Au**Other:** Diamond**Ore minerals:** Diamond, gold**Gangue minerals:****Geologic description:**

Quartzitic schist is present upstream from the Hot Springs fault and along the upstream tributaries, and it makes up most of the detritus in the creek gravel. A small granite outcrop is present upstream along Mammoth Creek (Lampright, 1996). All but this uppermost part of the creek lies within the Tintina fault zone. At the Hot Springs Fault junction the Crooked Creek flood plain dissects late Pleistocene fan gravel that forms a prominent 20 meter high bench to the north. To the south, several less prominent stair-stepped bench levels of late Pleistocene fan gravel grade down to the Crooked Creek flood plain. The alluvial gravel in Crooked Creek is composed predominantly of well-rounded to subrounded clasts as much as 15 cm in diameter. A pebble count in Crooked Creek approximately 4 kilometers downstream from the Hot Springs fault reveals a composition of 43 percent quartz-mica schist, 32 percent quartzite, 21 percent quartz, and 4 percent weathered granite (Yeend, 1991).

Gold-bearing gravel that is 2 to 5 meters thick overlies false bedrock with clay-rich, altered cobble gravel. Mining excavations in the area where the Hot Springs fault

crosses the Crooked Creek valley exposed fault gouge, altered schist bedrock, and orange gravel. Locally, where river scour has eroded the intervening gray gravel, the overlying muck rests directly on the orange gravel (Yeend, 1991, p. 19). Downstream from the Hot Springs fault are many locations where the gray gravel extends vertically into the orange gravel. Gray gravel locations within the orange gravel are interpreted as former sites of ice wedges (Kline, 1985). The gray gravel was able to fill in as the ice wedges melted and the creek washed over the uneven surface (Lampright, 1996).

The gold is thought to be contained within the gray gravel that overlies the clay-rich orange gravel. Some gold extends into the upper orange gravel, but for the most part the orange gravel acts as a trap for the fine gold.

Placer gold occurs primarily in the lower 1 to 2 meters of gray alluvial gravel, which is generally more consolidated than the overlying gravel and sometimes includes blocks of the underlying orange gravel (Yeend, 1991). The paystreak in Crooked Creek is as much as 400 meters wide and 1 to 2 meters thick (Yeend, 1991). Wood fragments are scattered through the gold bearing gravel. The upper gravel unit yielded an age from wood of approximately 1,480 B.P. This young age implies a continuous reworking of these gravels (Yeend, 1991).

Gold flakes are very flattened, commonly 1 to 3 mm in largest dimension. (Menzie, 1983) Values range from 0.01 to 0.03 ounces per cubic yard. Upstream from the fault, the values are lower, approximately 0.00625 ounces per cubic yard, as reported by miners on the basis of exploratory sampling (Lampright, 1996).

Placer mining has been confined to the 8 km of the creek immediately downstream from where the Hot Springs fault crosses Crooked Creek (Yeend, 1991, p. 17). Placer mining occurred in 1952 and from 1973 through the 1980's. Bob Cacy of Points North conducted geochemical and magnetic surveys on Crooked Creek in 1993 and 1994 (Bundtzen and others, 1993; Swainbank and others, 1994).

The first diamonds in the Circle Quadrangle were discovered on Crooked Creek. In 1982, Jim Regan discovered a 0.3 ct diamond in a sluice box. Frank Warren discovered an even larger, 1.4 ct diamond, during placer mining in 1984 (Eakins and others, 1985). In 1986, Paul Manuel recovered a third diamond from the Crooked Creek gravels about 1500 ft downstream from the Warren discovery (Forbes and others, 1987, p. 7). Subsequent investigations by experienced diamond producers indicated no trace minerals indicative of kimberlite or lamproite source rocks.

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Placer mining has been confined to the 8 km of the creek immediately downstream from where the Hot Springs fault crosses Crooked Creek (Yeend, 1991, p. 17). Placer mining occurred in 1952 and from 1973 through the 1980's. Bob Cacy of Points North conducted geochemical and magnetic surveys on Crooked Creek in 1993 and 1994 (Bundtzen and others, 1993; Swainbank and others, 1994).

The first diamonds in the Circle Quadrangle were discovered on Crooked Creek. In 1982, Jim Regan discovered a 0.3 ct diamond in a sluice box. Frank Warren discovered an even larger, 1.4 ct diamond, during placer mining in 1984 (Eakins and others, 1985). Subsequent exploration specifically designed to recover diamonds has been unsuccessful.

**Production notes:**

Values range from 0.01 to 0.03 ounces of gold per cubic yard. Upstream from the fault, the values are lower, approximately 0.00625 ounces per cubic yard, as reported by miners on the basis of exploratory sampling (Lampright, 1996). Total amount of production is unknown.

**Reserves:**

**Additional comments:**

First placer diamonds documented in Alaska were found on Crooked Creek.

**References:**

Nelson and others, 1954; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Cushing and Foster, 1984; Eakins and others, 1985; Kline, 1985; Yeend, 1985; Bundtzen and others, 1986; Forbes and others, 1987; Yeend, 1991; Bundtzen and others, 1993; Swainbank and others, 1994; Lampright, 1996.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s):** Deadwood Creek; Forty Three Pup; Twenty Five Pup; Sixteen Pup; Fifteen Pup; Nine Pup; Discovery Gulch; Tommys Pup; Switch Creek; Twenty Two Pup; Twenty Six Pup

**Site type:** Mine

**ARDF no.:** CI014

**Latitude:** 65.465

**Quadrangle:** CI B-2

**Longitude:** 144.926

**Location description and accuracy:**

The location is the confluence of Discovery Gulch and Deadwood Creek about 9 miles southwest of Circle Hot Springs. The placer area extends about 4.5 miles upstream and downstream from this point, and up the following tributaries to Deadwood Creek: Fortythree Pup, Twenty-five Pup, Sixteen Pup, Fifteen Pup, Nine Pup, Discovery Gulch, Tommys Pup, Switch Creek, Twenty-two Pup, and Twenty-six Pup.

**Commodities:**

**Main:** Au

**Other:** Ag, Hg, Pb, Sn, W

**Ore minerals:** Cassiterite, cinnabar, gold, scheelite, wolframite

**Gangue minerals:**

**Geologic description:**

Deadwood Creek flows through a northeast-trending valley for about 16 km where it then enters the Tintina fault trench and flattens into a broad fan. The creek meanders for another 8 km before emptying into Crooked Creek.

Almost all of the gold produced to date has come from the portion of Deadwood Creek above the Tintina fault trench. Deadwood Creek drainage lies within the 'Lower Schist' bedrock unit described by Wiltse and others (1995) as 'medium to dark gray and medium greenish-gray, fine to medium grained, commonly slightly calcareous quartz-muscovite schist, and lesser amounts of quartzose porphyroblastic-albite-chlorite schist and chlorite schist.' Numerous quartz veins ranging from less than a centimeter to almost a meter in width are present in the schists. Some quartz veins are folded with the enclosing schist; however, most veins cut across the foliation and are not folded. Disseminated pyrite and galena are locally present in the schist in the upper part of Deadwood Creek valley (Yeend, 1991). Granite outcrops are seen in the lower 6 km of the creek valley, south of the Hot Springs Fault contact.

Gravel in Deadwood Creek ranges from 1 to 5 meters in thickness, with as much as 3



meters of muck overburden. Boulders are up to 1 meter in diameter, but more commonly are 0.3 meter in diameter. Several wide benches mantled with gold-bearing gravel occur along the northwest side of the valley. The paystreak was as much as 130 m in width. In areas of quartzite bedrock, gold was found as deep as 1 m in cracks and crevices. Some nuggets weighed as much as 0.5 oz, but in general the gold was flaky and fine, averaging 5 to 6 mg (Mertie, 1938).

Large amounts of wolframite and cassiterite (1 to 2 pounds per cubic yard) were present in the heavy-mineral fraction of the concentrates recovered in several mining operations, especially those immediately above the mouth of Switch Creek (Johnson, 1910). Mertie (1938) reported that tin and tungsten mineralization in the bedrock occurred south of the southernmost outcrop of granite. Other heavy minerals detected in concentrates are magnetite, ilmenite, arsenopyrite, pyrite, galena, limonite, garnet, scheelite, and cinnabar. Small amount of uranium were detected in several of these minerals (Eberlein and others, 1977). Burand (1965) reported anomalous amounts of copper, zinc, and lead in sediments.

A reconnaissance soil sampling program on a ridge near Discovery Gulch outlined an area of seven samples ranging in value from 30 to 1125 ppb Au and associated elevated arsenic values (La Teko Resources Ltd, news release, January 6, 1998).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a); Polymetallic mineralization associated with granite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Active**Workings/exploration:**

Mining on Deadwood Creek has been nearly continuous since the original gold discovery. In the early years, placers were mined by drifting and shallow opencuts. After 1909, hydraulic mining became the primary method. In 1936, there were six individually owned placer mining operations on the creek - two hydraulic plants, two opencut operations, one drift mine and one mechanical excavation operation (Mertie, 1938). A dragline excavator used in 1936-37 cleared 3000 sq ft of bedrock daily. A dredge used in 1937-38 had 60 buckets of 4 cf capacity running at 27 buckets per minute (Mertie, 1938). Recent mines have been operating on the gravel near and just upstream from the Hot Springs fault (Yeend, 1991).

In 1996 and 1997, LaTeko Resources Ltd. conducted geological mapping, soil sam-

pling, and trenching with results indicating anomalous gold values. The anomalies appear to be associated with a northwest-trending granitic intrusion. Several samples returned better than 100 parts per billion gold (LaTeko Resources Ltd. Annual Report, 1997).

**Production notes:**

110 men working 8 out of the 47 claims produced approximately 5,000 oz of gold during 1896 (Dunham, 1898). Yield of 2 to 3 oz 'to the shovel' were not uncommon (2 to 3 oz of gold could be recovered from the gravel shoveled by a man in a 10-hour day). Total production from 1894 to 1906 was 33,865 fine ounces (Brooks, 1907).

**Reserves:****Additional comments:**

The entire length of the Deadwood Creek flood plain has been mined for gold, and the creek has a reputation among miners as being the most 'mined-out' creek in the Circle district (Yeend, 1991, p. 17). See also Switch Creek, ARDF no. CI056.

**References:**

Spurr, 1898; Brooks, 1904; Brooks, 1907; Prindle, 1905; Purington, 1905; Prindle, 1906, B 284; Prindle, 1906, B 295; Brooks, 1907; Brooks, 1908; Brooks, 1909; Brooks, 1911; Ellsworth, 1910; Johnson, 1910; Brooks, 1911; Ellsworth and Parker, 1911; Ellsworth, 1912; Hess, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Chapin, 1914; Brooks, 1916; Brooks, 1918; Martin, 1919; Smith, 1930; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Smith, 1938; Mertie, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Smith, 1942; Wedow and others, 1952; Wedow and others, 1953; Nelson and others, 1954; Wedow and others, 1954; Burand, 1965; Malone, 1965; Berg and Cobb, 1967; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Barker, 1979; Cushing and Foster, 1984; Eakins and others, 1985; Orris and Bliss, 1985; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:** Menzie, 1983; Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s): Deep Faith****Site type:** Prospect**ARDF no.:** CI015**Latitude:** 65.384**Quadrangle:** CI B-5**Longitude:** 146.406**Location description and accuracy:**

The location is the approximate center of the Deep Faith claim block. The claim block is located 75 road miles northeast of Fairbanks along the Steese Highway. The property is accessible via a short gravel road which is maintained by the State and local placer mine operators. The claim block consists of 64 state mining claims and 20 prospecting sites covering 5720 acres.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

The following description is largely from Wold, 1998. The Deep Faith claim block lies within the Yukon-Tanana Crystalline terrane of interior Alaska. Regional strike of bedrock compositional layering in this area is easterly to northeasterly, and faults trend subparallel to this structural grain. Large-scale folding is represented by northeasterly- to easterly-trending broad open antiforms and associated synforms. Stratigraphy of the Deep Faith claim block area is represented by a series of upper proterozoic and lower Paleozoic sedimentary and metasedimentary rocks consisting of the lower Fairbanks pelitic schists, the graphitic schist of the Cleary Sequence, the quartzite and quartz mica schist of the upper Fairbanks schist, and phyllitic schists and quartzites of the 'grit and metagrit sequence' (Smith, 1987). Several intrusives occur within the claim block and are part of the Hope granite suite. This series of plutons is part of a larger belt of Upper Cretaceous and lower Tertiary plutons which extends from southwest of Fairbanks northeast into Yukon Territory.

The earliest report of lode deposits described contact veins (Prindle, 1910). In 1926, a stibnite deposit was reported during the construction of a bedrock drain on Hope Creek (Joesting, 1943). Quartz veins containing small lenses and stringers of stibnite, explored by short tunnels in the 1920's off Sourdough Creek, contained over 27 percent Sb

(Killeen and Mertie, 1951). Samples collected from dumps in 1966 contained 23 percent stibnite (Berg and Cobb, 1967). There are several other lode occurrences in the area. Hope Creek has an antimony-copper-lead-molybdenum-tungsten occurrence (Joesting, 1943). The Faith/Charity Creeks stratiform gold deposit was described by Smith and others (1987), who measured a 170 ft section along Charity Creek that contains anomalous gold (14 ppb), lead (720 ppm), arsenic (140 ppm), and silver (500 ppb). The deposit is composed mostly of gray laminated quartzite and graphitic schist. Select samples from veins in the graphitic schist contain 4800 ppb gold. Veins along Faith Creek contains pyrite, sphalerite, arsenopyrite, chalcopyrite and stibnite. The Hope Creek tin-silver occurrence is hosted in the Hope granite suite and there are wollastonite/pyroxene-bearing skarns within 100 ft of the contact with the pluton.

**Alteration:****Age of mineralization:****Deposit model:**

Various polymetallic stratiform deposits in schist; also polymetallic veins and skarns.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

The state conducted an extensive geologic survey in the area during the mid-1980's and identified several potential lode deposits on the Faith Creek drainage.

**Production notes:****Reserves:****Additional comments:****References:**

Joesting, 1943; Killeen and Mertie, 1951; Berg and Cobb, 1967; Smith, 1987; Wold, 1998.

**Primary reference:** Wold, 1998.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)**Last report date:** 09/14/98

**Site name(s):** Dempsey Pup

**Site type:** Prospect

**ARDF no.:** CI016

**Latitude:** 65.34

**Quadrangle:** CI B-5

**Longitude:** 146.461

**Location description and accuracy:**

East wall of East Fork of Sourdough Creek about 2 mi above the Steese Highway at 2000 ft elevation. NE1/4 NW1/4 sec. 23, T 6.N., R 6 E.

**Commodities:**

**Main:** Sb

**Other:**

**Ore minerals:** Stibnite

**Gangue minerals:** Quartz

**Geologic description:**

Quartz vein containing small lenses and stringers of stibnite and possibly gold. The quartz vein is hosted in middle Paleozoic or older quartz schist, mica schist and marble of Yukon Crystalline terrane. Grab samples contained up to 28 percent Sb (Killeen and Mertie, 1951, Nokleberg and others, 1987).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Low-sulfide Au-quartz vein (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

36a

**Production Status** Undetermined

**Site Status:** Inactive

**Workings/exploration:**

Explored by several short adits.

**Production notes:****Reserves:****Additional comments:**

Includes references to Sb lode on Sourdough Creek.

**References:**

Joesting, 1943; Killeen and Mertie, 1951; Berg and Cobb, 1967; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Nokleberg and others, 1987.

**Primary reference:** Killeen and Mertie, 1951.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s):** Eagle Creek; Mastodon Fork; Miller Fork; Cripple Creek

**Site type:** Mine

**ARDF no.:** CI017

**Latitude:** 65.452

**Quadrangle:** CI B-3

**Longitude:** 145.422

**Location description and accuracy:**

The location is the intersection of Miller Fork and Mastodon Fork with Eagle Creek. Placer mining extended about 2 mi downstream on Eagle Creek and about 1 mile up Mastodon Fork; no mining was reported on Miller Fork.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Bedrock is mainly quartzose schists with many quartz veins. Mastodon Fork, Miller Fork and Cripple Creek drain an area underlain by the Upper Quartzite bedrock unit described by Wiltse and others (1995) as light to medium-gray fine- to medium-grained, quartzite, quartz-muscovite schist, and medium-gray to greenish-gray, fine- to medium-grained porphyroblastic-albite-chlorite-muscovite-quartz schist. Eagle Creek itself is underlain by the polyolithic Upper Schist unit which is dominated by thinly layered pelitic quartz-muscovite schist, muscovite-quartz schist, chlorite-quartz-muscovite schist and distinct intervals of garnetiferous, calcareous albite-porphyroblastic muscovite-chlorite schist with interlayered impure marbles.

Gold is located in the lowest several feet of gravel, in clay near bedrock, on bedrock, and in the top two feet of fractured bedrock (Spurr, 1898). The paystreak is 150 to 200 feet wide extending down Mastodon Fork and Eagle Creek in stream gravels 5 to 20 feet thick which are overlain by 2 to 15 feet of muck (Mertie, 1938).

Since about 1901, mining has been almost continuous on the creek. Open cut and drift mining methods were replaced by hydraulic plants in 1906. Prior to 1980 most of the rich gravel in Eagle and almost all of Mastodon Fork was mined. Since 1980, a large operation has been remining some of the hydraulic tailings in Eagle Creek and has mined some areas of gravel along the creek margins that were not mined by earlier operations. The width of the mined area across the creek is up to 100 meters (Yeend, 1991, p. 63).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Active**Workings/exploration:**

Since about 1901, mining has been almost continuous on the creek. Open cut and drift mining methods were replaced by hydraulic plants in 1906. Prior to 1980 most of the rich gravel in Eagle and almost all of Mastodon Fork was mined. Since 1980, a large operation has been remining some of the hydraulic tailings in Eagle Creek and has mined some areas of gravel along the creek margins that were not mined by earlier operations. The width of the mined area across the creek is up to 100 meters (Yeend, 1991, p. 63).

**Production notes:**

Ground mined in 1895 was reported to have averaged 3 ounces of gold per man per day. During 1897, 75 miners produced approximately 3,750 oz of gold, with only 4 of the 46 claims being worked (Dunham, 1898). Production through 1906 was about 29,000 oz of gold (Brooks, 1907). Gold fineness was 883 Au, 108 Ag (Mertie, 1938).

Ed Lapp and Sons Mining (ELSM) reported production on Eagle Creek in 1994 and 1996 (Swainbank and others, 1994,1996).

**Reserves:****Additional comments:**

Eagle Creek was the first area in Alaska where the gravels were elevated during placer mining. A gin pole and steam scraper were used to elevate and dump tailings alongside the cut. These rock piles can still be seen along Mastodon Fork (Yeend, 1991).

**References:**

Dunham, 1898; Spurr, 1898; Brooks, 1904; Prindle, 1905; Purington, 1905; Prindle, 1906, B 284; Prindle, 1906, B 295; Brooks, 1907, B 314; Brooks, 1908; Brooks, 1909; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Brooks, 1914; Brooks, 1915; Brooks, 1916; Brooks, 1918; Brooks and Martin, 1921; Brooks, 1923; Smith, 1929; Smith, 1930, B 810; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A;



Smith, 1936, B 868-A; Mertie, 1938; Smith, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Smith, 1942; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Orris and Bliss, 1985; Bundtzen and others, 1986; Yeend, 1991; Swainbank and others, 1994; Wiltse and others, 1995; Swainbank and others, 1996.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/08/98

**Site name(s):** Faith Creek; Deep Creek

**Site type:** Mine

**ARDF no.:** CI018

**Latitude:** 65.368

**Quadrangle:** CI B-5

**Longitude:** 146.279

**Location description and accuracy:**

The location is the confluence of Deep Creek and Faith Creek. Deep Creek is a tributary to Faith Creek. Most mining was near the mouth of Deep Creek, along the lower part of Deep Creek, and near the mouth of Faith Creek. Faith Creek is approximately 75 road miles northeast of Fairbanks, accessible via the Steese Highway.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The following is a summary extracted from a report by Freeman and Adams (1988):

The Faith Creek area is situated within a northeast-trending belt of polymetamorphic rocks of probable Proterozoic to early Paleozoic age. The belt is characterized by regional-scale open folds which trend plus or minus 20 degree from east-west. These regional structures often postdate earlier north-south trending structures. Within the Fairbanks and Circle mining districts, a distinctive metamorphic package of sedimentary and bimodal volcanic rocks can be correlated with most placer gold-producing creeks as well as known lode occurrences. This belt of rocks, known as the Cleary Sequence is present in several outcrops in the Faith Creek area and forms the bedrock for most of the claims on the property. These rocks have undergone regional metamorphism to the lower and middle greenschist facies. On the Faith Creek property the Cleary Sequence is exposed in a northeast-trending antiform whose axis trends through the property from the left limit of Deep Creek through the uplands to the south of Homestake Creek. In this area, the Cleary Sequence is characterized by a lower member consisting of massive gray quartzite with interbedded calcareous graphitic pelitic schist. This member is over 450 feet thick in the Faith Creek area. The base of the middle member of the Cleary Sequence on Faith Creek is marked by a 50 foot thick sequence of black fissile calcareous graphitic schist overlain by nearly 200 feet of quartz-eye lapilli tuff of volcanoclastic ori-

gin. The remainder of the measured section on Faith Creek (250 feet) is predominantly gray quartzite and interbedded calcareous graphitic schist. Detailed petrographic studies of the Cleary Sequence in the Fairbanks and Circle districts indicate that lithologic units which have been mapped as 'quartzite' commonly contain a significant volcanoclastic component. Sulfide content of the Cleary Sequence is highest in the calcareous graphitic quartzites of the lower member. Sulfide mineralogy is predominantly pyrite and arsenopyrite with lesser galena, sphalerite, chalcopyrite, stibnite, jamesonite, boulangerite and possible tetrahedrite.

There is very little specific information on the placer mining on Faith Creek other than placer gold mining reported as early as 1937 (Smith, 1939, p. 48). Deep Creek, the right limit tributary to Faith Creek, was reported to have a small placer mine as early as 1946 (Wedow and others, 1954, p. 8). There is no information on production during these early years of mining but production was likely small judging from the workings (Wedow and others, 1954, p. 8). Continuous operations occurred from 1964 through 1988 on Faith, Hope, Deep, Charity and Homestake Creeks.

In 1986 and 1987 the Alaska Division of Geological and Geophysical Surveys conducted a mapping and mineral evaluation study which covered the Faith Creek area north of Deep Creek. Results indicated the possible presence of a bedrock source for the placer deposits in the Faith Creek drainage (Smith, 1987). In 1993, A-J Mining spent part of the summer mapping and sampling on Faith Creek (Bundtzen and others, 1993). Sam Koppenberg reported production on Faith Creek in 1994 (Swainbank and others, 1994). KMM Mining successfully mined Faith Creek from 1986 to 1996 (Swainbank and others, 1996).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; medium**Site Status:** Active**Workings/exploration:**

Placer gold mining was reported as early as 1937 (Smith, 1939, p. 48). Little information is available concerning mining activities in the Faith Creek area between 1945 and 1964. A small placer operation on Deep Creek in 1946 was reported by Wedow (1954, p. 8). Continuous operations occurred from 1964 through 1988 on Faith, Hope, Deep, Charity and Homestake Creeks.

In 1986 and 1987 the Alaska Division of Geological and Geophysical Surveys con-

ducted a mapping and mineral evaluation study which covered the Faith Creek area north of Deep Creek. Results indicated the possible presence of a bedrock source for the placer deposits in the Faith Creek drainage (Smith, 1987). In 1993, A-J Mining spent part of the summer mapping and sampling on Faith Creek (Bundtzen and others, 1993). Sam Koppenberg reported production on Faith Creek in 1994 (Swainbank and others, 1994). KMM Mining successfully mined Faith Creek from 1986 to 1996 (Swainbank and others, 1996).

**Production notes:**

There is very little specific information on the placer mining on Faith Creek other than placer gold mining reported as early as 1937 (Smith, 1939, p. 48). Deep Creek, the right limit tributary to Faith Creek, was reported to have a small placer mine as early as 1946 (Wedow and others, 1954, p. 8). There is no information on production during these early years of mining but production was likely small judging from the workings (Wedow and others, 1954, p. 8). Continuous operations occurred from 1964 through 1988 on Faith, Hope, Deep, Charity and Homestake Creeks. In 1988, placer mining on Faith Creek below the mouth of Hope Creek recovered approximately 476 fine troy ounces. Bullion fineness averaged 879 with a range of 851 to 927. Approximately 150 troy ounces of bullion in nugget form were retained by the owners as jewelry grade gold (Freeman and Adams, 1988). Unknown quantities were produced by KMM Mining from 1986 to 1996, and by Sam Koppenberg in 1994.

**Reserves:****Additional comments:****References:**

Brooks, 1907; Prindle, 1908; Prindle, 1910; Prindle and Katz, 1913; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Smith, 1942; Wedow and others, 1954; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Bundtzen and others, 1986; Smith, 1987; Freeman and Adams, 1988; Bundtzen and others, 1993; Swainbank and others, 1994; Swainbank and others, 1996.

**Primary reference:** Smith, 1939, B 917-A; Wedow and others, 1954; Freeman and Adams, 1988.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Flat Creek

**Site type:** Prospect

**ARDF no.:** CI019

**Latitude:** 65.209

**Quadrangle:** CI A-6

**Longitude:** 146.817

**Location description and accuracy:**

The location is on Flat Creek, between First Pup and Second Pup. The Flat Creek prospect is located just south of mile 51 of the Steese Highway, on the lower 3.5 miles of the Flat Creek drainage.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The following geologic description is taken from Freeman, 1986:

The presence of two quartz cobbles containing visible gold as well as the occurrence of jamesonite indicate that a nearby lode source for gold has contributed to the placer gold on Flat Creek.

The general geologic fabric in the vicinity of the Flat Creek prospect is dominated by highly deformed northeast-trending low- to medium-grade pelitic and volcanic metamorphic rocks. Foster and others (1983) mapped a large northeast-trending thrust fault in the area which trends across the south flank of Twin Buttes, through the headwaters of Dexter Creek and crosses Flat Creek near the confluence with Second Pup.

Lithologies to the north of the thrust consist of medium- to coarse-grained muscovite-garnet-quartz plagioclase schist with local lenses(?) of chlorite-rich schist. This rock unit contains marker lenses composed of up to 70 percent white to pale yellow muscovite and up to 20 percent fine to medium-grained garnet. The unit is cut by numerous small dark green to green and pink mafic to eclogitic dikes and sills containing amphibole, chlorite, garnet, plagioclase and carbonate. The base of this thrust unit is highly sheared where it is in contact with the more resistant quartzites which underlie the thrust.

Lithologies south of and overthrust by the Flat Creek thrust are composed of pelitic, psammitic and volcanic protoliths which trend N45E and dip variably northwest and southeast off the flanks of a regional-scale northeast-trending antiform whose axial plane

follows the uplands between Twin Buttes and Mt. Ryan. The dominant lithology in this terrane is gray to gray-green quartzite and quartz mica schist composed of a medium-grained aggregate of quartz and lesser amounts of muscovite and feldspar (Foster and others, 1983). Mylonitic fabrics have been identified in this rock unit, probably as detachment or sympathetic thrust faults along bedding planes on the flanks of the antiform. Original lithologic compositions often are obliterated by post-metamorphic silicification and shearing attendant with mylonitization. This rock unit exhibits metamorphic assemblages which range from the chlorite zone of the greenschist facies to the staurolite and kyanite zones of the amphibolite facies. Zircons from arenitic units of this lithologic package have yielded U/Pb ages ranging from 1558 to 1797 mybp and a single Pb/Pb date of 2086 Ma (Foster and others, 1983), indicating a possible Proterozoic parentage for the zircons. However, the age of the sedimentary units in which the zircons were deposited probably is somewhat younger, perhaps as young as Devonian (J. Dillon, oral commun., 1986). Quartzite and quartz mica schist is mapped as the principal bedrock lithologies in the upper Dexter Creek and First Pup basins, all of Second Pup basin, and the whole of the Flat Creek valley above its confluence with Second Pup.

Subordinate to psammitic lithologies, but perhaps more important with respect to metallogeny, are the interbedded pelitic and volcanic units which are mapped in the upland areas south of the Flat Creek prospect. Chlorite-magnetite greenschist of mafic volcanic origin is the most widespread volcanic lithology in the area. This rock unit contains abundant magnetite in a fine-grained chloritic host rock which is interbedded with quartzite, shale and minor marble lenses. It is probable that many of the rock units mapped as quartzite and quartz-mica schist are in fact metarhyolitic exhalite and aquagene tuff units which comprise a major portion of the section.

There are no published accounts of mining activity; however, inspection of infrared imagery of the Flat Creek area indicates extensive surface disturbance in Flat Creek between Dexter Creek and Second Pup Creek, two major left-limit tributaries of lower Flat Creek. The morphological descriptions of valley alluvium and colluvium given by the prospect owner, Dick Byrd, along with the common occurrence of free mercury and amalgam in prospect samples suggests that Flat Creek proper was mined, probably by hand methods (Freeman, 1986, p. 2).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Undetermined**Site Status:** Inactive

**Workings/exploration:**

There are no published accounts of mining activity; however, inspection of infrared imagery of the Flat Creek area indicates extensive surface disturbance in Flat Creek between Dexter Creek and Second Pup Creek, two major left-limit tributaries of lower Flat Creek. The morphological descriptions of valley alluvium and colluvium given by the prospect owner, Dick Byrd, along with the common occurrence of free mercury and amalgam in prospect samples suggests that Flat Creek proper was mined, probably by hand methods (Freeman, 1986, p. 2).

**Production notes:**

No published accounts of production, but see 'Workings/exploration' field.

**Reserves:****Additional comments:****References:**

Foster and others, 1983; Freeman, 1986.

**Primary reference:** Freeman, 1986.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Fryingpan Creek

**Site type:** Prospect

**ARDF no.:** CI020

**Latitude:** 65.311

**Quadrangle:** CI B-4

**Longitude:** 145.557

**Location description and accuracy:**

Location is approximate site of claims in 1977, NW1/4 NE1/4 sec. 33, T. 6 N., R. 11 E. Fryingpan Creek is a tributary to Birch Creek.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Four to five ft of pay gravel lies underneath 15 ft of overburden. Depth to schist bedrock is about 20 ft (Ellsworth and Parker, 1911). Good gold values were reported by prospectors in the winter of 1910-11 (Ellsworth and Parker, 1911). Production by Paul Manuel was reported in the 1990's but the quantities are unknown.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Undetermined

**Site Status:** Inactive

**Workings/exploration:**



Prospect hole about 20 ft deep, 1909-10 (Ellsworth and Parker, 1911).

**Production notes:**

Production by Paul Manuel in the 1990's; quantities unknown.

**Reserves:****Additional comments:**

An access road to placer operations was completed in the mid-1980's.

**References:**

Ellsworth and Parker, 1911; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983.

**Primary reference:** Ellsworth and Parker, 1911

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Furs**Site type:** Prospect**ARDF no.:** CI021**Latitude:** 65.115**Quadrangle:** CI A-2**Longitude:** 144.669**Location description and accuracy:**

This site, a scheelite-bearing skarn bed, is located high on the ridge between the headwaters of Big Windy Creek and Puzzle Gulch, NW1/4 SE1/4 sec. 3, T. 3 N., R. 15 E.

**Commodities:****Main:** W**Other:****Ore minerals:** Scheelite**Gangue minerals:****Geologic description:**

Country rock consists of high-grade pelitic schist with subordinate calcareous schist, marble and augen gneiss. The country rock is intruded by W-bearing granitic rocks. The carbonate rocks are metamorphosed to skarn near the intrusive contacts. Scheelite appears in skarn beds and local quartz monzonite. W values are up to 2000 ppm, with minor Sn, Mo, and Cu (D. Menzie, oral commun., 1986).

**Alteration:****Age of mineralization:****Deposit model:**

Contact metamorphic tungsten deposit (Cox and Singer, 1986; model 14a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

14a

**Production Status** None**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Menzie and others, 1983.

**Primary reference:**

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Gold Dust Creek

**Site type:** Mine

**ARDF no.:** CI022

**Latitude:** 65.418

**Quadrangle:** CI B-3

**Longitude:** 145.478

**Location description and accuracy:**

Location is the approximate center of a placer area about 2500 ft long by 500 ft wide trending N 50 W along Gold Dust Creek. Gold Dust Creek is a tributary to Birch Creek, originating on the southwest flank of Mastodon Dome.

**Commodities:**

**Main:** Au

**Other:** Fe, Ti, W

**Ore minerals:** Gold, hematite, ilmenite, scheelite

**Gangue minerals:**

**Geologic description:**

Most of Gold Dust Creek flows within the Upper Quartzite and Upper Schist units described by Wiltse and others (1995). The Upper Schist is a mixed unit of variably garnetiferous pelitic quartz-muscovite schist, muscovite-quartz schist, chlorite-quartz-muscovite schist, and layers tens of meters thick of garnetiferous, calcareous albite-porphyroblastic muscovite-chlorite schist. The Upper Quartzite unit is a porphyroblastic albite-chlorite-muscovite-quartz schist.

Gravel clasts in the creek are subangular to subrounded and are commonly as much as 30 cm in diameter. The area of mined gravel is approximately 70 m wide for most of the creek length, with an average gravel thickness of 4 m. Average gold values were 0.007 to 0.01 ounces per cubic yard (Menzie and others, 1983). Concentrates include ilmenite granules up to 0.5 cm, hematite nodules up to 2 cm, along with pyrite and scheelite (Menzie and others, 1983). Galena-bearing boulders have been found in previously placer mined creek gravels by John Mitchell in the late 1980's.

Mining was reported shortly after drilling in 1936 (Mertie, 1938, p. 231). There were two active placer operations during 1975, but little is known about productivity (Eberlein and others, 1977, p. 20). Simple sluiceway operations used in the early 1980's were moderately to highly efficient in recovering coarse gold, but low in recovering fine gold. As a result, research by the local miners led to the use of a sophisticated washing plant with jigs. Gold in the 120 to 400 mesh range was routinely recovered with the new sys-

tem (Yeend, 1991). In 1995, Alpine Exploration Co. conducted 1400 feet of reverse circulation drilling to explore veins found during earlier placer mining (Bundtzen and others, 1995). About 8 km of the 11 km long creek has been mined, but the upper 3 km has a steep gradient and contains little gravel, and so it remains unmined (Yeend, 1991).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Active**Workings/exploration:**

Mining was reported shortly after drilling in 1936 (Mertie, 1938, p. 231). There were two active placer operations during 1975. Simple sluicework operations used in the early 1980's were moderately to highly efficient in recovering coarse gold, but low in recovering fine gold. As a result, research by the local miners led to the use of a sophisticated washing plant with jigs. Gold in the 120 to 400 mesh range was routinely recovered with the new system (Yeend, 1991). In 1995, Alpine Exploration Co. conducted 1400 feet of reverse circulation drilling to explore veins found during earlier placer mining (Bundtzen and others, 1995). About 8 km of the 11 km long creek has been mined, but the upper 3 km has a steep gradient and contains little gravel, and so it remains unmined (Yeend, 1991).

**Production notes:**

Average gold values were 0.007 to 0.01 ounces per cubic yard (Menzie and others, 1983). There were two active placer operations in 1975 but little is known of productivity (Eberlein and others, 1977, p. 20).

**Reserves:****Additional comments:****References:**

Mertie, 1938; Cobb, 1972, MF-391; Carnes, 1976; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Eakins and others, 1985; Yeend, 1985; Yeend, 1991; Bundtzen and others, 1995; Wiltse and others, 1995.

**Primary reference:** Yeend, 1991; Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Greenhorn Gulch

**Site type:** Mine

**ARDF no.:** CI023

**Latitude:** 65.451

**Quadrangle:** CI B-3

**Longitude:** 145.071

**Location description and accuracy:**

Greenhorn Gulch extends about 1.5 mi north and 1.5 mi south of the coordinate intersection; it is a tributary of Boulder Creek. Mining activity in the 1970's and 1980's also has occurred at the junction with Tinhorn Gulch.

**Commodities:**

**Main:** Au

**Other:** Ag

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The creek along Greenhorn Gulch flows north for approximately 5 km before joining Boulder Creek. Bedrock throughout the entire Greenhorn Gulch drainage is the Lower Schist unit described by Wiltse and others (1995) as slightly calcareous quartz-muscovite schist, porphyroblastic albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose porphyroblastic albite-chlorite schist and chlorite schist.

An alluvium-covered bench on the west side of the gulch is 8 to 12 m above the valley bottom and grades into the bench in Boulder Creek. The creek gravel in Greenhorn Gulch is composed of boulders up to 70 cm in diameter, but are more commonly 10 to 30 cm across. The gravel is 1 to 2 meters thick over the schist bedrock and is as much as 30 meters wide (Yeend, 1991). A fragment of vein quartz with cavities from which sulfides had been weathered out assayed 24 oz. silver per ton and contained specks of free gold (Spurr, 1898, p. 293).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

There was small-scale placer mining reported in 1896, and 1911 to 1912; however, mining was hampered by the lack of water. Recent mining activity in the 1970's and 1980's has occurred on the creek junction with Tinhorn Gulch (Yeend, 1991; Menzie and others, 1983).

**Production notes:**

A 2.5 oz gold nugget was recovered in the early days of mining, and vein quartz in the gravel reportedly contained finely disseminated free gold (Spurr, 1898).

**Reserves:****Additional comments:**

Greenhorn Gulch is the only part of the Boulder Creek drainage that has had significant placer mining activity. Greenhorn Gulch has also been called Greenhorn Creek but it should not be confused with the much less productive 'Greenhorn Creek' that is a tributary of Bottom Dollar Creek.

**References:**

Spurr, 1898; Brooks, 1907; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Mertie, 1932; Mertie, 1938; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Barker, 1979; Menzie and others, 1983; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:**

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98



**Site name(s):** Half Dollar Creek; Two-Bit Gulch

**Site type:** Mine

**ARDF no.:** CI024

**Latitude:** 65.423

**Quadrangle:** CI B-2

**Longitude:** 144.79

**Location description and accuracy:**

The location is the approximate center of placered area about 0.5 miles long by 1,000 ft wide on Half Dollar Creek below the mouth of Two-Bit Gulch. Some mining was on Two-Bit.

**Commodities:**

**Main:** Au

**Other:** Sn, W

**Ore minerals:** Cassiterite, gold, scheelite

**Gangue minerals:**

**Geologic description:**

The entire length of both Two-bit Creek and Half Dollar Creek is underlain by a Cretaceous pluton described by Wiltse and others (1995) as chloritized porphyritic (hornblende) biotite monzogranite. Primary trace minerals in the granite include zircon, allanite, apatite and ilmenite. Uranium has been detected by fluorimetric tests (Eberlein and others, 1977). Minerals in the heavy-mineral fraction of concentrates from the granite contain allanite, hematite, limonite, pyrrhotite, scheelite, sphene and zircon.

Stream placer concentrates contain gold, scheelite and cassiterite. The paystreak is narrow and the gold distribution is spotty (Cobb, 1976, [OFR 76-633]). The unmined gravel on Half Dollar Creek is mostly colluvium derived from side slopes (Yeend, 1991).

Prospecting and/or mining occurred in 1909 to 1914, 1935, 1938 to 1942, and probably 1976 to 1980 (Menzie and others, 1983). Several small placers were operated along this drainage in the early 1980's (Yeend, 1991). Production from these operations is unknown.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**  
39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Prospecting and/or mining occurred in 1909 to 1914, 1935, 1938 to 1942, and probably 1976 to 1980 (Menzie and others, 1983). Several small placers were operated along this drainage in the early 1980's (Yeend, 1991).

**Production notes:**

Prospecting and/or mining occurred in 1909 to 1914, 1935, 1938 to 1942, and probably 1976 to 1980 (Menzie and others, 1983). Several small placers were operated along this drainage in the early 1980's (Yeend, 1991). Amount of gold produced from these operations is unknown.

**Reserves:**

**Additional comments:**

See also Bottom Dollar Creek, ARDF no. CI007.

**References:**

Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Brooks, 1914; Chapin, 1914; Brooks, 1915; Smith, 1937; Smith, 1939, B 917-A; Smith, 1941; Smith, 1942; Joesting, 1943; Nelson and others, 1954; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Barker, 1979; Menzie and others, 1983; Bundtzen and others, 1986; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:**

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Homestake Creek

**Site type:** Mine

**ARDF no.:** CI025

**Latitude:** 65.41

**Quadrangle:** CI B-5

**Longitude:** 146.203

**Location description and accuracy:**

The coordinates are for the approximate midpoint of Homestake Creek, which is a tributary of Charity Creek, which in turn is a tributary of Faith Creek.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Gold reportedly was discovered in an approximately 8-foot-thick gravel deposit at a schist-granite porphyry contact (Prindle, 1910, p. 209; Ellsworth and Parker, 1911, p. 157). Worked by small-scale hydraulic and hand methods in the early 1900's. No mining is reported in the literature after 1912 (Menzie and others, 1983). Prospecting conducted by Dick MacIntosh in 1987 to 1988 but no mining was reported (C.J. Freeman, oral commun., 1998).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Worked by small-scale hydraulic and hand methods in the early 1900's. No mining is reported in the literature after 1912 (Menzie and others, 1983). Prospecting conducted by Dick MacIntosh in 1987 to 1988 but no mining was reported (C.J. Freeman, oral commun., 1998).

**Production notes:****Reserves:****Additional comments:**

See also Charity Creek, ARDF no. CI011, Faith Creek, ARDF no. CI018 and Hope Creek, ARDF no. CI026.

**References:**

Brooks, 1907; Prindle, 1908; Prindle, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Hope Creek

**Site type:** Prospect

**ARDF no.:** CI026

**Latitude:** 65.4

**Quadrangle:** CI B-5

**Longitude:** 146.354

**Location description and accuracy:**

The location is the approximate center of mining activity along Hope Creek. Mining activity occurred at several locations along the creek, specifically at 65.40 N, 146.32 W and 65.40 N, 146.36 W. Hope Creek is a tributary to Faith Creek.

**Commodities:**

**Main:** Au

**Other:** Cu, Mo, Pb, REE, Sb, W

**Ore minerals:** Allanite, galena, gold, malachite, molybdenite, pyrrhotite, rutile, scheelite, stibnite

**Gangue minerals:**

**Geologic description:**

Bedrock exposure is rare in the Hope Creek area, except on ridgetops, and locally along creeks. Micaceous quartzite, typically weathering to massive slabs and blocks, is the most abundant rubble and forms most of the bedrock outcrops. White, sulfide-free, quartz lenses, segregations and veinlets are common in the quartzite. Quartz-mica schist and pelitic schist also form some outcrops. Nonfoliated hornblende quartz monzonite occurs as small bodies in Hope Creek drainage. The rock varies in composition between quartz monzonite and monzogranite. Hornblende quartz monzonite is commonly altered to chlorite-ankerite-sericite with or without pyrite. Fluorite and garnet are occasionally present. Alteration occurs both along plutonic contacts and along shear zones within the plutons. Numerous cobbles and boulders of sulfide-bearing hornfels occur in Hope Creek. Samples of sulfide-bearing hornfels and quartz-monzonite north of Hope Creek are strongly anomalous in As (up to 7,000 ppm) and Au (up to 550 ppb) and moderately anomalous in Sb (up to 120 ppb). Sulfide-bearing hornfels and quartz monzonite samples from south of Hope Creek are also anomalous in these elements with maximum values of 53 ppm As, 43 ppb Au, and 29 ppb Sb. Virtually no mineralization was observed in metamorphic rocks away from plutonic contacts. In summary, sulfide-bearing hornfels and altered quartz monzonite samples near hornblende quartz monzonite contacts are the most gold-rich rocks found in the Hope Creek drainage. (Swainbank and Burton,

1987, p. 6-19 to 6-22)

Placer gold was found in stream gravel, apparently in subeconomic amounts. Stibnite deposits were reportedly found in 1926, but were apparently reburied by 1942 (Joesting, 1943, p. 12).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a); Gold-rich sulfide-bearing hornfels and quartz monzonite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Undetermined

**Site Status:** Inactive

**Workings/exploration:**

Placer gold was discovered in the early 1900's but was never mined extensively (Menzie and others, 1983, p. 46).

**Production notes:**

**Reserves:**

**Additional comments:**

See also Faith Creek, ARDF no. CI018.

**References:**

Brooks, 1907; Prindle, 1908; Prindle and Katz, 1913; Joesting, 1943; Wedow and others, 1952; Wedow and others, 1953; Nelson and others, 1954; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Swainbank and Burton, 1987; Lampright, 1996.

**Primary reference:** Swainbank and Burton, 1987.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Hot Springs Creek

**Site type:** Occurrence

**ARDF no.:** CI027

**Latitude:** 65.477

**Quadrangle:** CI B-2

**Longitude:** 144.67

**Location description and accuracy:**

The location is the approximate location of placer claims active in 1976 to 1979. Hot Springs Creek originates southwest of Circle Hot Springs and flows just north of town where it empties into a marsh.

**Commodities:**

**Main:** U ?, REE, Th ?, W

**Other:**

**Ore minerals:** Uraniferous (?) allanite, scheelite, sphene, zircon

**Gangue minerals:**

**Geologic description:**

The headwaters of Hot Springs Creek drain an area underlain by Tertiary granite. The granite is light gray biotite-hornblende-tourmaline monzogranite to syenogranite (Wiltse and others, 1995). Uranium- and/or thorium-bearing allanite, sphene and zircon, and scheelite were found in placer concentrate samples (Cobb, 1976, [OFR 76-633]). Houston International reportedly tested sedimentary uranium in Tertiary sediments near Circle Hot Springs in 1980. This site is a U/Th-W-REE geochemical anomaly.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Bates and Wedow, 1953; Wedow and others, 1954; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983.

**Primary reference:** Cobb, 1976, OFR 76-633.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98



**Site name(s):** Yankee Creek

**Site type:** Mine

**ARDF no.:** CI028

**Latitude:** 65.549

**Quadrangle:** CI C-3

**Longitude:** 145.492

**Location description and accuracy:**

The location is the site of a mining camp set up near the mouth of Yankee Creek in 1932. Yankee Creek is a tributary of Porcupine Creek.

**Commodities:**

**Main:** Au

**Other:** Sn

**Ore minerals:** Cassiterite, gold

**Gangue minerals:**

**Geologic description:**

Gold and cassiterite occur in placers near the mouth of the creek.

The source of the gold and cassiterite is believed by miners to be the mineralized zone on Porcupine Dome (Burand, 1968, p. 29). Yankee Creek was mined intermittently through 1981 (Menzie and others, 1983, p. 53).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Yankee Creek was mined intermittently through 1981 (Menzie and others, 1983, p. 53).

**Production notes:**

Mining has been reported (see Workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:**

See also Porcupine Creek, ARDF no. CI046.

**References:**

Smith, 1934; Mertie, 1938; Burand, 1968; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s): Independence Creek****Site type:** Mine**ARDF no.:** CI029**Latitude:** 65.486**Quadrangle:** CI B-3**Longitude:** 145.214**Location description and accuracy:**

Independence Creek was mined from just above Harrison Fork to the confluence with Mastodon Creek. The placered areas extend from about 3,000 ft to 6,000 ft upstream of, to about 7,500 ft downstream of, the intersection of the coordinates. Independence Creek is a major fork of Mammoth Creek.

**Commodities:****Main:** Au**Other:** Pb, Sn, W**Ore minerals:** Cassiterite, galena, gold, scheelite, wolframite, xenotime**Gangue minerals:****Geologic description:**

Independence Creek is about 6.5 km long. Below the junction of Independence and Mastodon Creeks, the drainage is known as Mastodon Creek. Bedrock in the Independence Creek drainage is the Lower Schist unit described by Wiltse and others (1995) as a slightly calcareous quartz-muscovite schist and porphyroblastic albite-quartz-chlorite-muscovite schist. The bedrock is cut by numerous quartz veins.

Pay gravel was as much as 425 ft wide but generally no more than 325 ft wide. Gravels are 4 to 5 ft thick and overlain by 0 to 10 ft of muck. The gold is fine-grained and lies mainly within 3 ft of the gravel-bedrock contact. In one part of the creek, weighted mean fineness (eight assays) was 787 Au and 201 Ag. In another part it was 810 Au and 175 Ag (five assays representing 1500 oz of gold) (Mertie, 1938, p. 219-222). Gold fineness increases progressively downstream. The source of gold, according to miners, is localized in the area around Mastodon Dome. Heavy mineral concentrates contain wolframite, xenotime, zircon, garnet, and hematite (Nelson and others, 1954).

Drift mining occurred in the early days. A dredge operated near the mouth of Independence Creek for a short time in the 1920's (Mertie, 1938). Most mining was by hydraulic methods. This early mining yielded values of 0.05 to 0.4 ounces per cubic yard (Mertie, 1938). Much of the gravel has been washed at least three times during multiple mining operations spanning 90 years. Recent mining has focused on the margins of the

creek under old mine tailings (Yeend, 1991, p. 23).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; medium

**Site Status:** Inactive

**Workings/exploration:**

Drift mining occurred in the early days. A dredge operated near the mouth of Independence Creek for a short time in the 1920's (Mertie, 1938). Most mining was by hydraulic methods. Much of the gravel has been washed at least three times during multiple mining operations spanning 90 years. Recent mining has focused on the margins of the creek under old mine tailings (Yeend, 1991, p. 23).

**Production notes:**

Early mining yielded values of 0.05 to 0.4 ounces per cubic yard (Mertie, 1938).

**Reserves:****Additional comments:**

See also Mammoth Creek, ARDF no. CI036, Mastodon Creek, ARDF no. CI037 and Miller Creek, ARDF no. CI039.

**References:**

Spurr, 1898; Prindle, 1905; Prindle, 1906; Brooks, 1907; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Chapin, 1914; Brooks, 1915; Brooks, 1919; Martin, 1919; Smith, 1930; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Mertie, 1938; Smith, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Smith, 1942; Nelson and others, 1954; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Wiltse and others, 1995.

**Primary reference:** Mertie, 1938; Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development

Corporation)

**Last report date:** 09/09/98

**Site name(s): Joker Group****Site type:** Prospect**ARDF no.:** CI030**Latitude:** 65.432**Quadrangle:** CI B-2**Longitude:** 146.769**Location description and accuracy:**

The Joker Group can be reached via an 8 mile long dirt road that starts in Circle Hot Springs. The claims are above the confluence of Bottom Dollar and Half -Dollar Creeks. The coordinates are for the approximate center of the Joker Group claims.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

The bedrock in the Joker claims groups is primarily porphyritic igneous rock containing large K-spar phenocrysts. Visible gold is found in the quartz veins. Both lode and placer gold are found at these claims (Vetter, 1995).

Wiltse and others (1995) mapped the bedrock in the area as Cretaceous chloritized porphyritic (hornblende) biotite monzogranite to syenogranite. They also mapped a mafic dike in the area of the 88 Group claims which is described as black to dark gray, aphanitic to slightly porphyritic, with major plagioclase, augite, hornblende and magnetite.

The granite is exposed along several ditches where it is deeply weathered and fractured. Abundant visible gold is seen in the stockwork veining. The light yellow color of the gold suggests a high silver content. Placer gold from the creeks below has a fineness of 750. Sampling in the vicinity of the Joker claims failed to delineate any significant extent to the stockwork veining; however, the trend of the stockwork veining is parallel to the ditch exposure, which is not as continuous as that at the 88 Group (Bakke, 1991).

**Alteration:****Age of mineralization:**

Mineralization is later than the Cretaceous granitic host rocks.

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Bakke, 1991; Vetter, 1995; Wiltse and others, 1995.

**Primary reference:** Vetter, 1995.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Ketchem Creek; Holdem Creek

**Site type:** Mine

**ARDF no.:** CI031

**Latitude:** 65.484

**Quadrangle:** CI B-2

**Longitude:** 144.741

**Location description and accuracy:**

The location is at the junction of Holdem and Ketchem Creeks. Most mining was on two sites along Ketchem Creek: 1) an area about 0.5 mile long beginning about 0.5 miles below the mouth of Holdem Creek, and 2) a 0.25 mile long area centered near the junction of Holdem and Ketchem Creeks. There has also probably been some mining on Holdem Creek.

**Commodities:**

**Main:** Au

**Other:** REE, Sn, W

**Ore minerals:** Allanite, cassiterite, gold, scheelite

**Gangue minerals:**

**Geologic description:**

Ketchem Creek flows northeast, drains the north slope of Ketchem Dome, and eventually crosses into the Tintina fault zone, approximately 3 miles west of Circle Hot Springs. The western fork is called Holdem Creek. Before entering the Tintina fault zone, both Ketchem and Holdem Creeks are underlain by Tertiary granite bedrock described by Wiltse and others (1995) as a light gray biotite monzogranite to syenogranite. An east-trending mafic dike intrudes the granite on the east side of Ketchem Creek about a quarter of a mile above the junction with Holdem Creek. Most mining has occurred south of the fault zone. This fault zone is exposed by mining and is marked by deep-orange clay-rich gravel. The gravel to the north of the fault has spread laterally and two to three colors per pan can be collected there (Yeend, 1991).

Placer gravel in Ketchem Creek varies from 2 to 5 meters in thickness and is commonly overlain by 1 to 2 meters of muck. Gravel in the creek bed near the Hot Springs fault is up to 200 meters in width, most of which has been mined. Gold is concentrated in the lower 1 meter of gravel and is generally coarse and flattened. Nuggets of 1 to 3 ounces have been recovered. Fineness of gold about 0.783 Au and 0.207 Ag (Mertie, 1938). Heavy minerals in the gravel include scheelite, cassiterite, allanite, garnet, sphene and zircon (Wedow and others, 1954, p. 5; Cobb, 1973, p. 122, [B 1374]).



Unknown amount of gold was produced by placer mining from 1933 to 1949, 1975, 1981, and throughout the 1990's. Winter drifting and dragline excavators operated in the 1930's; however, large boulders were a serious problem just below the mouth of Holdem Creek. In 1991, Magic Circle, Inc., worked Ketchum Creek for 65 days and processed 17,230 tonnes (19,000 tons) of pay gravel during the season. Greenhorn Mining processed 7,646 cubic meters (10,000 cubic yards) of auriferous pay in the same year (Swainbank and others, 1991). More recent mining has been conducted on Ketchem Creek by Fred Wilkinson (C.J. Freeman, oral commun., 1998).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Active**Workings/exploration:**

Placer mining occurred from 1933 to 1949, 1975, 1981, and throughout the 1990's. Winter drifting and dragline excavators operated in the 1930's; however, large boulders were a serious problem just below the mouth of Holdem Creek. In 1991, Magic Circle, Inc., worked Ketchum Creek for 65 days and processed 17,230 tonnes (19,000 tons) of pay gravel during the season. Greenhorn Mining processed 7,646 cubic meters (10,000 cubic yards) of auriferous pay in the same year (Swainbank and others, 1991). More recent mining has been conducted on Ketchem Creek by Fred Wilkinson (C.J. Freeman, oral commun., 1998).

**Production notes:**

Unknown amount of gold produced by placer mining activity from 1933 to 1949, 1975, 1981, and throughout the 1990's. Production reported throughout the 1990's by Ed Lapp and Sons Mining (ESLM), Magic Circle, Inc. and Greenhorn Mining.

**Reserves:****Additional comments:**

Ketchem Creek has also been spelled 'Ketchum'.

**References:**

Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937;

Mertie, 1938; Smith, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Smith, 1942; Wedow and others, 1954; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Bundtzen and others, 1986; Yeend, 1991; Lampright, 1996.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s): Ketchem Dome****Site type:** Prospect**ARDF no.:** CI032**Latitude:** 65.467**Quadrangle:** CI B-2**Longitude:** 144.787**Location description and accuracy:**

The location is approximately 1500 ft NE of the Ketchem Dome summit at the site of the Ketchem Dome tin prospect trench reported in Dahlin and others (1987). The Ketchem Dome tin prospect is located approximately 5 miles southwest of Circle Hot Springs. The prospect lies 1 mile to the west of, and approximately 1300 ft above, a gravel road that leads north to the Steese Highway.

**Commodities:****Main:** Sn**Other:****Ore minerals:** Cassiterite**Gangue minerals:** Feldspar, muscovite, quartz, tourmaline**Geologic description:**

The following information is taken from a Bureau of Mines report by Dahlin and others (1987). The tin mineralization on Ketchem Dome consists of cassiterite which occurs as grains disseminated in a greisen matrix. A bulk sample from the largest and best-developed greisen vein exposed at Ketchem Dome contained 0.51 percent Sn. Concentration of the cassiterite by gravity table methods resulted in a product that contained 56 percent cassiterite at a grade of 41.4 percent Sn. The tin-bearing greisen vein mineralization near Ketchem Dome cuts a leucocratic, seriate phase of the Circle Hot Springs biotite granite pluton near its contact with hornfelsed sedimentary rocks. The pluton has been K-Ar dated at 60.5 +/- 1.8 m.a. (Wilson and Shew, 1981). Four hand-excavated trenches expose the greisen near Ketchem Dome. The greisen is mineralogically zoned, with a selvage of muscovite-altered granite that grades into a core of dense, black, chlorite- and sericite-altered granite with traces of limonite after pyrite and veinlets of quartz. Purple fluorite occurs on fractures, and topaz is locally associated with more pervasive alteration. The mineralization exposed at Ketchem Dome is typical of greisen found elsewhere in the area. One sample assayed greater than 1,000 ppm Sn (Dave Menzie, USGS, field notes, 1984).

**Alteration:**

Chloritic, quartz-white mica, topaz, fluorite.

**Age of mineralization:**

The tin-bearing greisen vein mineralization near Ketchum Dome cuts a biotite granite pluton near its contact with hornfelsed sedimentary rocks. The pluton has been K-Ar dated at 60.5 +/- 1.8 m.a. (Wilson and Shew, 1981).

**Deposit model:**

Sn greisen deposit (Cox and Singer, 1986; model 15c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

15c

**Production Status** None**Site Status:** Inactive**Workings/exploration:**

Five pits in area, excavated by Resource Associates of Alaska in 1983.

**Production notes:****Reserves:****Additional comments:****References:**

Wilson and Shew, 1981; Foster and others, 1983; Menzie and others, 1983; Dahlin and others, 1987; Nokleberg and others, 1987; Wilkinson, 1987.

**Primary reference:** Dahlin and others, 1987.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)**Last report date:** 09/09/98

**Site name(s):** Ketchem Dome Area

**Site type:** Mines

**ARDF no.:** CI033

**Latitude:** 65.408

**Quadrangle:** CI B-2

**Longitude:** 144.875

**Location description and accuracy:**

The location is roughly the center of a productive placer area of approximately 80 square miles. It includes the following main drainages: Deadwood Creek, Ketchem Creek and Bottom Dollar Creek.

**Commodities:**

**Main:** Au

**Other:** Ag, Hg, Sn, W

**Ore minerals:** Cassiterite, cinnabar, gold, scheelite, silver

**Gangue minerals:**

**Geologic description:**

The creeks around Ketchem Dome drain a variety of rock types. To the north and northeast of Ketchem Dome, Ketchem and Holdem Creeks drain an area underlain by Tertiary granite. To the south, the Bottom Dollar Creek drainage is underlain by both Cretaceous granite and quartz-muscovite schist - the Lower Schist unit described by Wiltse and others (1995). Deadwood Creek drainage to the northwest is underlain both by Tertiary granite and the quartz-muscovite Lower Schist.

Gold is found in the gravel close to bedrock and in cracks in the bedrock. Placer gold has been mined on several creeks within this area that have been described separately (see Workings and Exploration).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Active

**Workings/exploration:**

See Ketchem Creek, ARDF no. CI031, Bottom Dollar Creek, ARDF no. CI007 and Deadwood Creek, ARDF no. CI014 for site-specific workings and exploration.

**Production notes:**

See Ketchem Creek, ARDF no. CI031, Bottom Dollar Creek, ARDF no. CI007 and Deadwood Creek, ARDF no. CI014 for specific site-production notes.

**Reserves:**

**Additional comments:**

See also Ketchem Creek, ARDF no. CI031, Bottom Dollar Creek, ARDF no. CI007 and Deadwood Creek, ARDF no. CI014.

**References:**

Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Wiltse and others, 1995.

**Primary reference:** Cobb, 1973, B 1374.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Little Albert Creek

**Site type:** Occurrence

**ARDF no.:** CI034

**Latitude:** 65.664

**Quadrangle:** CI C-3

**Longitude:** 145.053

**Location description and accuracy:**

The location is the site of a conglomerate described by Weber and Foster (1982). Little Albert Creek drainage is on the southern side of the East Crazy Mountains and joins Albert Creek approximately 4 miles northwest of Central.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Several small colors of gold were panned from two samples of pink, sandy conglomerate of possible Tertiary age. The sandy conglomerate is poorly to moderately sorted, locally pink or orange-brown, with well-rounded clasts that are generally 1-5 cm in diameter. Some boulders are up to 45 cm in diameter. A pebble count of 100 clasts resulted in 44 quartzite, 37 quartz, 9 weathered schistose quartzite, and 10 chert (Weber and Foster, 1982).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Weber and Foster, 1982.

**Primary reference:** Weber and Foster, 1982.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Loper Creek**Site type:** Prospect**ARDF no.:** CI035**Latitude:** 65.754**Quadrangle:** CI D-4**Longitude:** 145.621**Location description and accuracy:**

The location is the approximate center of 3 claims staked in 1976, in SE1/4 NE1/4 sec. 27, T. 11 N., R. 10 E. Loper Creek originates just northwest of Pinnel Mountain, in sec. 14, T. 8 N., R. 10 E.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Loper Creek flows north approximately 17 miles from its headwaters near Pinnel Mountain to its mouth at Preacher Creek. Good placer gold prospects were reported as early as 1908 in unfrozen gravel less than 8 ft deep (Brooks, 1909, p. 54). In the mid-1980's a rough road was bulldozed from the upper part of Porcupine Creek across the drainage divide and down into the upper part of Loper Creek. Some stripping of muck was done along the margins of Loper Creek, although it is not known if any mining was subsequently done (Yeend, 1991).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Undetermined

**Site Status:** Inactive

**Workings/exploration:**

Good placer gold prospects were reported as early as 1908 in unfrozen gravel less than 8 ft deep (Brooks, 1909, p. 54). In the mid-1980's a rough road was bulldozed from the upper part of Porcupine Creek across the drainage divide and down into the upper part of Loper Creek. Some stripping of muck was done along the margins of Loper Creek, although it is not known if any mining was subsequently done (Yeend, 1991).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Brooks, 1909; Ellsworth, 1910; Smith, 1934, B 857-A; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Yeend, 1991.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Mammoth Creek

**Site type:** Mine

**ARDF no.:** CI036

**Latitude:** 65.531

**Quadrangle:** CI C-3

**Longitude:** 145.205

**Location description and accuracy:**

The location is the approximate center of a broad placered area extending along the entire length of the creek from the confluence of Mastodon and Independence Creeks to Crooked Creek, a distance of about 4 miles.

**Commodities:**

**Main:** Au

**Other:** Cu, Mo, Pb, W

**Ore minerals:** Allanite, galena, gold, molybdenite, scheelite

**Gangue minerals:**

**Geologic description:**

Bedrock along Mammoth Creek is mainly quartzite schist and mica schist intruded by granitic bodies and cut by numerous quartz veins (Prindle, 1905; Mertie, 1938). About 12 feet of locally-derived gold-bearing gravel is overlain by 3 feet of overburden. Gold in upper valley is fairly coarse and light colored. Fineness is about 840, increasing downstream. The source of gold is believed to be quartz veins and mineralized zones in the bedrock (Mertie, 1938). Samples of granite talus contained allanite, galena, molybdenite, scheelite, iron sulfide minerals, garnet, topaz and hematitic copper carbonate minerals (Nelson and others, 1954).

In 1906, a small steam shovel capable of handling 50 cubic yards of gravel per hour was installed on Mammoth Creek, and a 9.5 km long ditch was built in 1908 to bring water from Bonanza Creek for hydraulic mining. The largest hydraulic plant in the Circle district was used in mining the entire length of Mammoth Creek from Mastodon to Porcupine Creeks (Ellsworth, 1910; Ellsworth and Parker, 1911). In 1915 the Berry Dredging Company installed a dredge on the creek. It worked upstream along several parallel paths, was dismantled, carried downvalley, and reassembled several times during the following 35 years (Yeend, 1991). The main channel of the creek is completely mined (Menzie and others, 1983). In the 1980's, as many as four separate mining plants were operating along the creek in an attempt to clean the bedrock better than it had been by dredging, as well as to wash pockets of gravel left unmined along the channel margin.

In addition, the thin mantle of colluvium on the channel sides yielded some gold following the stripping of the barren overlying ice-rich muck (Yeend, 1991).

Gold was discovered on Mammoth Creek in 1894. Yields were 0.3 to 0.5 ounces of gold per man per day by the 'shoveling-in' method of mining (Dunham, 1898). The early miners recovered a few 3 and 4 ounce nuggets from gravel that yielded values of 0.1 to 0.15 ounces per cubic yard (Prindle, 1905). Detailed production records have not been published.

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

In 1906, a small steam shovel capable of handling 50 cubic yards of gravel per hour was installed on Mammoth Creek, and a 9.5 km long ditch was built in 1908 to bring water from Bonanza Creek for hydraulic mining. The largest hydraulic plant in the Circle district was used in mining the entire length of Mammoth Creek from Mastodon to Porcupine Creeks (Ellsworth, 1910; Ellsworth and Parker, 1911). In 1915 the Berry Dredging Company installed a dredge on the creek. It worked upstream along several parallel paths, was dismantled, carried downvalley, and reassembled several times during the following 35 years (Yeend, 1991). The main channel of the creek is completely mined (Menzie and others, 1983). In the 1980's, as many as four separate mining plants were operating along the creek in an attempt to clean the bedrock better than it had been by dredging, as well as to wash pockets of gravel left unmined along the channel margin. In addition, the thin mantle of colluvium on the channel sides yielded some gold following the stripping of the barren overlying ice-rich muck (Yeend, 1991).

**Production notes:**

Gold was discovered on Mammoth Creek in 1894. Yields were 0.3 to 0.5 ounces of gold per man per day by the 'shoveling-in' method of mining (Dunham, 1898). The early miners recovered a few 3 and 4 ounce nuggets from gravel that yielded values of 0.1 to 0.15 ounces per cubic yard (Prindle, 1905). Detailed production records have not been published.

**Reserves:**

**Additional comments:**

See also Mastodon Creek, ARDF no. CI037, Independence Creek, ARDF no. CI029 and Miller Creek, ARDF no. CI039.

**References:**

Spurr, 1898; Dunham, 1898; Brooks, 1904; Brooks, 1905; Prindle, 1905; Purington, 1905; Prindle, 1906; Brooks, 1907, B 314; Brooks, 1909; Ellsworth, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Brooks, 1915; Brooks, 1916; Smith, 1917, BMB 153; Brooks, 1918; Martin, 1919; Mertie, 1938; Smith, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Smith, 1942; Nelson and others, 1954; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Bundtzen and others, 1986; Orris and Bliss, 1985; Yeend, 1991.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Mastodon Creek; Forty Two Gulch; Baker Gulch

**Site type:** Mine

**ARDF no.:** CI037

**Latitude:** 65.47

**Quadrangle:** CI B-3

**Longitude:** 145.298

**Location description and accuracy:**

The location is the intersection of Mastodon Creek and Baker Gulch. The placered area extends approximately 2 miles up and downstream, along Mastodon Creek. Mastodon Creek has its headwaters on the northeast flank of Mastodon Dome. It flows in a northeasterly direction for approximately 9.5 km before joining Independence Creek. Below this junction the creek is known as Mammoth Creek. The eastern headwater tributary of Mastodon Creek is known as Forty-Two Gulch. Baker Gulch, about 2.5 km downstream, is the only other tributary of Mastodon Creek.

**Commodities:**

**Main:** Au

**Other:** Sn

**Ore minerals:** Gold, cassiterite

**Gangue minerals:**

**Geologic description:**

Bedrock of the Mastodon Creek drainage is mostly the Middle Schist and Quartzite unit described by Wiltse and others (1995) as quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist, with lesser amounts of quartzose porphyroblastic albite-chlorite schist.

Gold is in the basal 6 feet of unfrozen gravel, on bedrock, and in the top 7 feet of bedrock. Average depth to bedrock is 10 to 12 feet (Prindle, 1913, p. 63). Both the stream and bench gravels are auriferous. The paystreak is the richest in the district and is 200 feet wide and 7 to 10 feet thick. Gold is coarsest near the head of the stream and contains abundant quartz. Downstream the gold becomes more flaky, carries less quartz and shows an increase in fineness (.740 to .811 Au) (Mertie, 1938). Cassiterite is reported in concentrates (Cobb, 1973, [B 1374]). The gravel in Mastodon Creek is coarse and consists mainly of boulders with diameters of 10 to 30 cm, but some boulders are as much as 1 m across. Clasts are commonly subangular to rounded (Yeend, 1991, p. 13).

Mining on Mastodon Creek has been nearly continuous since gold was discovered. In the early 1900's, most operations consisted of 'shoveling in' gravel to an elevated sluice-

box with wood riffles. A steam hoist and a hydraulic plant with a steam scraper were also used (Brooks, 1907). A dredge operated in 1912 to 1913, 1915, and 1918 to 1926. Hydraulic mining was the most favored method on Mastodon Creek for most of its history. In 1937, a dragline excavator began to be used. Baker Gulch was heavily prospected by trenching and panning in 1988 (Yeend, 1991).

Production for Mastodon Creek through 1936 was between 96,758 and 145,137 fine ounces (Cobb, 1976, p. 43 to 45, [OFR 76-633]). The early mining operations recovered 0.1 to 0.15 ounces per cubic yard of gravel, whereas by the 1930's, 0.01 to 0.0125 ounces per cubic yard was a common yield (Yeend, 1991). Mastodon Creek produced an estimated 150,000 to 200,000 ounces of gold (Yeend, 1991). In 1987, an operation in the upper creek valley had to discontinue mining because the gold values were only 0.005 ounces per cubic yard (Yeend, 1991).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

Mining on Mastodon Creek has been nearly continuous since gold was discovered there in the late 1800's. In the early 1900's, most operations consisted of 'shoveling in' gravel to an elevated sluicibox with wood riffles. A steam hoist and a hydraulic plant with a steam scraper were also used (Brooks, 1907). A dredge operated in 1912 to 1913, 1915, and 1918 to 1926. Hydraulic mining was the most favored method on Mastodon Creek for most of its history. In 1937, a dragline excavator began to be used. Baker Gulch was heavily prospected by trenching and panning in 1988 (Yeend, 1991).

**Production notes:**

Production for Mastodon Creek through 1936 was between 96,758 and 145,137 fine ounces (Cobb, 1976, p. 43 to 45, [OFR 76-633]). The early mining operations recovered 0.1 to 0.15 ounces per cubic yard of gravel, whereas by the 1930's, 0.01 to 0.0125 ounces per cubic yard was a common yield (Yeend, 1991). Mastodon Creek produced an estimated 150,000 to 200,000 ounces of gold (Yeend, 1991). In 1987, an operation in the upper creek valley had to discontinue mining because the gold values were only 0.005 ounces per cubic yard (Yeend, 1991).

**Reserves:****Additional comments:**

Mastodon Creek has produced more gold than any other creek in the Circle district and in its early history was known as the 'best creek in Alaska' (Dunham, 1898). See also Mammoth Creek, ARDF no. CI036, Independence Creek, ARDF no. CI029 and Miller Creek, ARDF no. CI039.

**References:**

Spurr, 1898; Brooks, 1904; Prindle, 1905; Purington, 1905; Brooks, 1905; Prindle, 1906, B 284; Prindle, 1906, B 295; Brooks, 1907, B 314; Brooks, 1908; Brooks, 1909; Ellsworth, 1910; Johnson, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Brooks, 1914; Chapin, 1914; Brooks, 1915; Ellsworth and Davenport, 1915; Brooks, 1916; Smith, 1917, BMB 142; Brooks, 1918; Martin, 1919; Brooks and Martin, 1921; Martin, 1921; Brooks, 1923; Brooks and Capps, 1924; Brooks, 1925; Smith, 1926; Moffit, 1927; Smith, 1929; Smith, 1930, B 810; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Mertie, 1938; Smith, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Smith, 1942; Nelson and others, 1954; Burand, 1965; Burand, 1968; Koschmann and Bergendahl, 1968; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Yeend, 1991.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98



**Site name(s):** Mastodon Dome Area (includes Mammoth Creek, Miller Creek, Eagle Creek, and Mastodon Creek)

**Site type:** Mines

**ARDF no.:** CI038

**Latitude:** 65.417

**Quadrangle:** CI B-3

**Longitude:** 145.339

**Location description and accuracy:**

Sites comprise productive placer area of approximately 120 sq. mi. including Mammoth Creek and its tributaries and the northeastern tributaries of Twelve Mile Creek. For specific site information see the following: Mammoth Creek, ARDF no. CI036, Miller Creek, ARDF no. CI039, Eagle Creek, ARDF no. CI017 and Mastodon Creek, ARDF no. CI037.

**Commodities:**

**Main:** Au

**Other:** Ag, Sb, Sn, W

**Ore minerals:** Cassiterite, gold, silver

**Gangue minerals:**

**Geologic description:**

Bedrock in the Mastodon Dome area is varied. Eagle Creek drainage to the west of Mastodon Dome is underlain by both the Upper Quartzite and Upper Schist units described by Wiltse and others (1995). Mastodon Creek is underlain by the Middle Schist and Quartzite unit.

Streams in this area have 5 to 10 feet of gravel under a few feet of muck. Gold is in the bottom few feet of gravel and in cracks in bedrock. Fineness of gold varied from 0.787-0.838 Au and 0.153-0.201 Ag.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; medium**Site Status:** Inactive**Workings/exploration:**

See individual creeks for specific workings and exploration information: Mammoth Creek, ARDF no. CI036, Miller Creek, ARDF no. CI039, Eagle Creek, ARDF no. CI017 and Mastodon Creek, ARDF no. CI037.

**Production notes:**

See individual creeks for specific **Production notes:** Mammoth Creek, ARDF no. CI036, Miller Creek, ARDF no. CI039, Eagle Creek, ARDF no. CI017 and Mastodon Creek, ARDF no. CI037.

**Reserves:****Additional comments:**

See also Mastodon Creek, ARDF no. CI037, Eagle Creek, ARDF no. CI017, Miller Creek, ARDF no. CI039 and Mammoth Creek, ARDF no. CI036.

**References:**

Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Yeend, 1991.

**Primary reference:** Yeend, 1991.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)**Last report date:** 09/09/98

**Site name(s):** Miller Creek**Site type:** Mines**ARDF no.:** CI039**Latitude:** 65.511**Quadrangle:** CI C-3**Longitude:** 145.298**Location description and accuracy:**

The placered area extends discontinuously along Miller Creek for about 1.5 miles up and downstream from the intersection of the coordinates. Miller Creek is a tributary to Mammoth Creek. The Steese Highway parallels the lower 4 km of Miller Creek on the north side.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Miller Creek is approximately 8 km in length and empties into Mammoth Creek about 2 km below the mouth of Mastodon Creek. The upper part of Miller Creek is underlain by the Middle Schist and Quartzite unit described by Wiltse and others (1995) as fine- to medium-grained quartz-muscovite schist, porphyroblastic albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose porphyroblastic albite-chlorite-schist. The lower part of the creek, including the confluence with Mammoth Creek, is underlain by the Lower Schist, a unit consisting of slightly calcareous quartz-muscovite schist, porphyroblastic albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose, porphyroblastic albite-chlorite schist and chlorite schist. Tertiary biotite granite crops out in the lower one half mile of the creek (Freeman and others, 1988).

In the lower valley, gravel thickness is 2 to 3 meters and overlying muck is 1 to 2 meters thick. Clasts in Miller Creek gravel are subangular to well-rounded and are as much as 1 meter in diameter (Yeend, 1991). Locally, a 1 meter thick bed of clay is present at the base of the gravel (Mertie, 1938). Most gold was recovered from the lower meter of gravel and at the gravel-bedrock contact in a width across the valley ranging from 15 to 20 meters. The gold formed fine flat scales and only a few nuggets weighing as much as 1 ounce were recovered (Mertie, 1938). Analyses of two sets of 7 assays gave weighted mean values of fineness of 832 Au and 162 Ag, and 838 Au and 153 Ag (Mertie, 1938).

Placer gold was mined intermittently from 1895 to 1940 but there are no data on production (Cobb, 1976, p. 47, [OFR 76-633]). Hydraulic mining was common throughout the district in the middle 20th century and only the thin, muck-covered, low-grade gravel was left unmined. In the early 1980's, only one mining operation was active near the mouth of Miller Creek. That operation involved thawing and moving a 10 meter thick section of gravel (Wilkinson, 1984).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

Placer gold was mined intermittently from 1895 to 1940 but there are no data on production (Cobb, 1976, p. 47, [OFR 76-633]). Hydraulic mining was common throughout the district in the middle 20th century and only the thin, muck-covered, low-grade gravel was left unmined. In the early 1980's, only one mining operation was active near the mouth of Miller Creek. That operation involved thawing and moving a 10 meter thick section of gravel (Wilkinson, 1984).

**Production notes:**

Placer gold was mined intermittently from 1895 to 1940, and in the early 1980's one mining operation was active near the mouth of Miller Creek, but there are no data on production (Cobb, 1976, p. 47, [OFR 76-633]; Wilkinson, 1984).

**Reserves:****Additional comments:**

See also Mammoth Creek, ARDF no. CI036, Independence Creek, ARDF no. CI029 and Mastodon Creek, ARDF no. CI037.

**References:**

Spurr, 1898; Brooks, 1904; Prindle, 1905; Purington, 1905; Prindle, 1906; Brooks, 1907, B 314; Ellsworth, 1910; Ellsworth and Parker, 1911; Prindle, 1913; Brooks, 1915; Martin, 1919; Smith, 1930; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A;

Smith, 1937; Smith, 1938; Mertie, 1938; Smith, 1939, B 910-A; Smith, 1941; Smith, 1942; Burand, 1965; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Wilkinson, 1984; Freeman and others, 1988; Wiltse and others, 1995.

**Primary reference:** Cobb, 1976, OFR 76-633.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Miller House

**Site type:** Occurrence

**ARDF no.:** CI040

**Latitude:** 65.525

**Quadrangle:** CI C-3

**Longitude:** 145.247

**Location description and accuracy:**

The location is a road cut along the Steese Highway, near Miller House.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Arsenopyrite, Fe-oxides, gold, pyrite

**Gangue minerals:** Zircon

**Geologic description:**

This site contains massive to disseminated arsenopyrite in four large and four small iron-stained shear zones. Zones over 150 meters long occur in middle Paleozoic or older schist of the Yukon-Tanana terrane. Intense alteration occurs along the zones. Grab samples contain up to 3.9 grams per ton Au (Menzie and others, 1983; Nokleberg and others, 1987).

**Alteration:**

Significant amount of Fe-oxide.

**Age of mineralization:**

**Deposit model:**

Auriferous arsenopyrite along altered shear zones.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples collected and analyzed.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Wedow and others, 1954; Berg and Cobb, 1967; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Tripp and others, 1982; Menzie and others, 1983; Foster and others, 1984; Nokleberg and others, 1987.

**Primary reference:** Nokleberg and others, 1987.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Nome Creek Area; Sumner Creek

**Site type:** Mine

**ARDF no.:** CI041

**Latitude:** 65.342

**Quadrangle:** CI B-6

**Longitude:** 146.7

**Location description and accuracy:**

Nome Creek is a productive placer area of approximately 40 square miles extending from Moose Creek to Sourdough Creek. Most mining was from about 1 km above the junction with Summer Creek to the junction with Moose Creek. Some mining was done on Summer Creek, just above its mouth. The location is the approximate center of the mined area and about 7 miles E-SE of Table Top Mountain. Nome Creek is now a recreational panning area that is accessible from the Steese Highway at mile marker 53.7 via a two-wheel drive gravel road that runs 6 miles to Nome Creek (Lampright, 1996).

**Commodities:**

**Main:** Au

**Other:** Sb, Sn, Th, W

**Ore minerals:** Cassiterite, gold, monazite, scheelite, stibnite

**Gangue minerals:**

**Geologic description:**

Headwaters of Nome Creek are in the Mt. Prindle area where a small lower Tertiary pluton intrude Paleozoic and (or) Precambrian schist (Cobb, 1973, p. 174, [B 1374]). The paystreak is 2 to 4 feet thick overlain by about 15 feet of gravel (Ellsworth and Parker, 1911, p. 165). Concentrates contain gold, cassiterite, monazite, topaz and tourmaline (Wedow and others, 1954, p. 8).

Gold was discovered in 1910 (Ellsworth and Parker, 1911). Dredging occurred in 1926 to 1931, 1939 to 1940, and 1946 (Cobb, 1976, p. 50, [OFR 76-633]). Mining occurred during several seasons between 1960 and 1982 (Menzie and others, 1983). Most of the mining has been about 1 km above the junction with Sumner Creek to the junction with Moose Creek, a distance of about 10 km. Some work was also done on Sumner Creek, just above its junction with Nome Creek. Nome Creek is now a state recreational mining site limited to non-mechanized operations.

**Alteration:**



**Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Gold was discovered in 1910 (Ellsworth and Parker, 1911). Dredging occurred in 1926 to 1931, 1939 to 1940, and 1946 (Cobb, 1976, p. 50, [OFR 76-633]). Mining occurred during several seasons between 1960 and 1982 (Menzie and others, 1983). Most of the mining has been about 1 km above the junction with Sumner Creek to the junction with Moose Creek, a distance of about 10 km. Some work was also done on Sumner Creek, just above its junction with Nome Creek. Nome Creek is now a state recreational mining site limited to non-mechanized operations.

**Production notes:**

There are no data on production but the workings suggest that the total is substantial (Menzie and others, 1983, p. 49).

**Reserves:****Additional comments:**

See also Sourdough Creek, ARDF no. CI054.

**References:**

Ellsworth and Parker, 1911; Ellsworth and Davenport, 1913; Prindle and Katz, 1913; Smith, 1929; Smith, 1930, B 810; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A; Smith, 1937; Smith, 1941; Joesting, 1942; Smith, 1942; Bates and Wedow, 1953; Wedow and others, 1954; Overstreet, 1967; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Holm, 1973; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Eakins and others, 1985; Bundtzen and others, 1986; Lampright, 1996.

**Primary reference:** Lampright, 1996.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** North Fork Harrison Creek; South Fork Harrison Creek

**Site type:** Mines

**ARDF no.:** CI042

**Latitude:** 65.42

**Quadrangle:** CI B-3

**Longitude:** 145.181

**Location description and accuracy:**

The location is the approximate center of the placered area that trends E-W along the North Fork for about 1 mile. The North Fork and the South Fork are both tributaries of Harrison Creek, which itself is a tributary of Birch Creek. The North Fork of Harrison Creek drains the southeast slope of Mastodon Dome. Harrison Creek has been extensively mined over almost its entire length (Yeend, 1991, p. 20).

**Commodities:**

**Main:** Au

**Other:** Sn

**Ore minerals:** Cassiterite, gold

**Gangue minerals:**

**Geologic description:**

The bedrock underlying the North Fork is varied and includes the Upper Quartzite, Middle Schist and Quartzite and the Lower Schist units of Wiltse and others (1995). The southeast flank of Mastodon Dome is underlain by the Upper Quartzite, which is a porphyroblastic albite-chlorite-muscovite-quartz schist with quartzites and micaceous quartzites. The Middle Schist and Quartzite unit is a quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist, and thickly layered quartzites. The Lower Schist unit is a slightly calcareous quartz-muscovite schist, porphyroblastic albite-quartz-chlorite-muscovite schist and lesser amounts of quartzose porphyroblastic-albite-chlorite schist and chlorite schist.

Gold is frequently concentrated in the lowermost 3 feet of gravel and in the upper foot or two of bedrock (Mertie, 1938). Mined gravel deposits were generally about 3 meters thick and 30 to 45 meters wide (Yeend, 1991). Muck overlying the gravel was rarely encountered during mining (Mertie, 1938). Recovered gold was generally fine, flaky, and bright (Brooks, 1907, p. 188). Nuggets weighing as much as 3 ounces were recovered, but were rare. Gold recovered from the upstream part of the North Fork was often ragged and frequently occurred with attached quartz. Spurr (1898) reported a block of quartz-schist containing a quartz vein 'richly spotted with flakes and specks of gold' in

the upper valley of the North Fork (Yeend, 1991). Cassiterite, garnet, and pyrite occur in heavy-mineral concentrates (Brooks, 1907, p. 188; Cobb, 1973, p. 122, [B 1374]). Mean fineness of 13 North Fork assays is 837 Au and 154 Ag (Mertie, 1938).

Gold was reportedly discovered in 1893 on Pitka's Bar (Mertie, 1938). There is some confusion in the literature over the location of Pitka's Bar. U.S.G.S. OFR 83-170B (Menzie and others, 1983) describes the location as at the mouth of the North Fork, but the U.S.G.S. Circle B-2 quadrangle topographic map shows the location of Pitka's Bar at the mouth of Harrison Creek, on Birch Creek. Spurr (1898) reported the first gold discovery to be in 1895(?) near the head of the North Fork (Yeend, 1991).

Before the middle of 1896, all of the North Fork of Harrison Creek was staked. Prospecting and mining occurred in 1905, 1924, and 1953 to 1981. Most of creek has been mined. Hydraulic mining operations were active up to 1980 (Menzie and others, 1983, p. 45). In 1993, on the South Fork of Harrison Creek, Windy Hill Mining completed a geophysical survey (Bundtzen and others, 1993, p. 10).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

Gold was reportedly discovered in 1893 on Pitka's Bar (Mertie, 1938). There is some confusion in the literature over the location of Pitka's Bar. U.S.G.S. OFR 83-170B (Menzie and others, 1983) describes the location as at the mouth of the North Fork, but the U.S.G.S. Circle B-2 quadrangle topographic map shows the location of Pitka's Bar at the mouth of Harrison Creek, on Birch Creek. Spurr (1898) reported the first gold discovery to be in 1895(?) near the head of the North Fork (Yeend, 1991).

Before the middle of 1896, all of the North Fork of Harrison Creek was staked. Prospecting and mining occurred in 1905, 1924, and 1953 to 1981. Most of creek has been mined. Hydraulic mining operations were active up to 1980 (Menzie and others, 1983, p. 45). In 1993, on the South Fork of Harrison Creek, Windy Hill Mining completed a geophysical survey (Bundtzen and others, 1993, p. 10).

**Production notes:**

Prospecting and mining occurred in 1905, 1924, and 1953 to 1981. Most of creek has been mined, but production information has not been published.

**Reserves:****Additional comments:****References:**

Spurr, 1898; Brooks, 1907; Ellsworth, 1910; Ellsworth and Parker, 1911; Prindle, 1913; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Mertie, 1938; Smith, 1938; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Smith, 1942; Burand, 1968; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Coonrad, 1982; Menzie and others, 1983; Yeend, 1991; Bundtzen and others, 1993; Wiltse and others, 1995.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s): Ox Group****Site type:** Prospect**ARDF no.:** CI043**Latitude:** 65.466**Quadrangle:** CI B-3**Longitude:** 145.204**Location description and accuracy:**

The location is to the north and east of the east fork of Independence Creek, in the NE1/4 sec. 2, T. 7 N., R. 12 E.

**Commodities:****Main:** Sb**Other:****Ore minerals:** Stibnite**Gangue minerals:****Geologic description:**

This prospect consists of a one-foot-wide northeast striking, west dipping, stibnite vein that contains up to 65 percent antimony. Gold is reported to be present but the values are unknown (R. Vetter, oral commun., 1998).

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken (R. Vetter, oral commun., 1998).

**Production notes:**

**Reserves:****Additional comments:****References:**

**Primary reference:** R. Vetter, oral commun., 1998.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s): Palmer Creek****Site type:** Mine**ARDF no.:** CI044**Latitude:** 65.014**Quadrangle:** CI A-3**Longitude:** 145.47**Location description and accuracy:**

The coordinates are for the approximate center of the lowermost of two placered areas on the creek. Both areas are about 1,500 to 2,000 ft long. Palmer Creek is a tributary to the Middle Fork of the Chena River.

**Commodities:****Main:** Au**Other:** W**Ore minerals:** Gold, scheelite**Gangue minerals:****Geologic description:**

Numerous quartz and calcite veinlets that cut the quartzitic and phyllitic country rock have been considered the source of gold by some workers (Menzie and others, 1983, p. 50).

During mining operations in 1941 most of the concentrates consisted of scheelite (Joesting, 1942, p. 41). No granitic rocks are known in the drainage area and there are no igneous rocks in the stream gravels, so the scheelite probably occurs in some of the numerous quartz stringers in the schist country rock (Joesting, 1942, p. 41).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**  
39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Surface mining in 1937 to 1941 or later (Lampright, 1996, p. 73).

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:**

**Additional comments:**

See also Van Curlers Bar, ARDF no. CI087 and Shamrock Creek, ARDF no. CI052.

**References:**

Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Lampright, 1996.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98



**Site name(s):** Pgds; Puzzle Gulch

**Site type:** Prospect

**ARDF no.:** CI045

**Latitude:** 65.124

**Quadrangle:** CI A-1

**Longitude:** 144.427

**Location description and accuracy:**

The prospect is a scheelite-bearing skarn, in SW1/4 SE1/4 sec. 35, T. 4 N., R. 16 E.

**Commodities:**

**Main:** W

**Other:**

**Ore minerals:** Scheelite

**Gangue minerals:**

**Geologic description:**

Scheelite-bearing skarn more than 15 ft thick (G. Sidder, oral commun., 1987).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Tungsten skarn deposit (Cox and Singer, 1986; model 14a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

14a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:****Additional comments:****References:**

Menzie and others, 1983.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s): Porcupine Creek****Site type:** Mine**ARDF no.:** CI046**Latitude:** 65.548**Quadrangle:** CI C-4**Longitude:** 145.504**Location description and accuracy:**

The location is the center of a placer area that extends for about 1500 ft along Porcupine Creek. The area was mined in the 1930's, just upstream from the mouth of Yankee Creek. The location of more recent mining includes areas both up and downstream from the older placers.

**Commodities:****Main:** Au**Other:** Sn, W**Ore minerals:** Cassiterite, gold, scheelite**Gangue minerals:****Geologic description:**

Bedrock underlying Porcupine Creek is the Lower Schist unit described by Wiltse and others (1995) as a slightly calcareous quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose porphyroblastic-albite-chlorite schist and chlorite schist.

Placers mined in 1936 consisted of about 13 feet of gravel overlain by about 2 feet of muck. Gravel being mined in the 1980's was 3 to 8 meters thick with a paystreak 30 to 70 meters wide. The gravel is composed mostly of bedrock material. Most pebbles do not exceed a foot in diameter; however, some boulders as large as 3 feet in diameter have been recovered in mining operations. Gold is found mainly on and in bedrock and is coarse, ragged and shotty (Mertie, 1938). Numerous nuggets, some up to 2 to 3 ounces, have been found, but these had considerable amounts of attached quartz (Mertie, 1938). A four ounce nugget was recently recovered, and an 8 and one half ounce nugget was reported recently that is the largest nugget known from the area (Menzie and others, 1983, p. 50). Weighted mean of gold mined in 1934 and 1935 shows a fineness of 822 Au and 172 Ag (Mertie, 1938). Along with the gold, cassiterite and scheelite also can be found (Menzie and others, 1983, p. 50).

Placer gold was discovered in the 1890's but mining was intermittent and on a small scale until the 1930's. Hydraulic operations began in 1932 and a drag-line excavator was

used to handle the tailings. Some mining occurred in the late 1950's and (or) early 1960's. Two operations were active in 1975 and activity was reported in 1980 and 1981 (Menzie and others, 1983, p. 50). Placer operations by Mack Rite and Harold Dunham were conducted in 1991 (Bundtzen and others, 1991, p. 32). Paul and Company conducted various activities in 1992, including stripping, exploration, sluicing and reclamation (Swainbank and others, 1992). Paul and Company continued mining in 1993 and 1994. In 1994, they mined approximately 85,000 cubic yards (Swainbank and others, 1994, p. 28).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Active**Workings/exploration:**

Placer gold was discovered in the 1890's but mining was intermittent and on a small scale until the 1930's. Hydraulic operations began in 1932 and a drag-line excavator was used to handle the tailings. Some mining occurred in the late 1950's and (or) early 1960's. Two operations were active in 1975 and activity was reported in 1980 and 1981 (Menzie and others, 1983, p. 50). Placer operations by Mack Rite and Harold Dunham were conducted in 1991 (Bundtzen and others, 1991, p. 32). Paul and Company conducted various activities in 1992, including stripping, exploration, sluicing and reclamation (Swainbank and others, 1992). Paul and Company continued mining in 1993 and 1994. In 1994, they mined approximately 85,000 cubic yards (Swainbank and others, 1994, p. 28).

**Production notes:**

Yields were from 0.01 to 0.0125 ounces per cubic yard (Yeend, 1991).

**Reserves:****Additional comments:****References:**

Spurr, 1898; Brooks, 1907, B 314; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Mertie, 1938; Smith, 1938, B 897-A; Smith, 1939, B 910-

A; Smith, 1939, B 917-A; Smith, 1941; Burand, 1968; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Bundtzen and others, 1991; Yeend, 1991; Swainbank and others, 1992; Swainbank and others, 1994.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Portage Creek

**Site type:** Mine

**ARDF no.:** CI047

**Latitude:** 65.462

**Quadrangle:** CI B-2

**Longitude:** 144.613

**Location description and accuracy:**

The placered area extends about 3/4 mile up and downstream from the intersection of the coordinates. Portage Creek flows in a northeasterly direction and can be accessed by gravel road just a few miles east of Circle Hot Springs.

**Commodities:**

**Main:** Au

**Other:** Bi, Cu, Sn, U, W, Zn

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

Portage Creek near its source is underlain by Cretaceous granite, then flows over chlorite-muscovite schist and Tertiary granite before crossing into the Tintina fault zone. Almost all of the mining has been conducted south (upstream) of the Tintina fault zone. Gold is restricted to the upper 0.5 meters of the orange, schist-rich gravel.

A high percentage of the detritus in Portage Creek is colluvium, so the mined gravel is poorly sorted (Yeend, 1991). One meter of muck typically overlies 2 meters of colluvial-alluvial gravel. A defined 'paystreak' is not often present due to the colluvial mixing and lack of alluvial water to wash and sort. Because of the thick colluvial gravel cover on the side slopes, the mined gravel channel is quite narrow, only 20 to 30 meters (Yeend, 1991). Placer concentrates contain allanite, arsenopyrite, bismuthinite, cassiterite, garnet, gold, hematite, ilmenite, magnetite, monazite, pyrite, scheelite, sphalerite, sphene, spinel, topaz, tourmaline, uranothorianite, wolframite and zircon (Nelson and others, 1954).

Gold was not discovered on the creek until the early 1900's (Brooks, 1907). Full-scale mining did not begin on the creek until 1933. Two miners worked the upper valley in 1936. One operation consisted of drift mining and one was a prospecting shaft (Mertie, 1938). Gravel valued at 0.025 to 0.0625 ounces per cubic yard was being mined in 1937 by several miners shoveling in an opencut (Lampright, 1996, p. 74). There were two operations on the creek in 1975 and anywhere from two to five operations per year during

the 1980's (Yeend, 1991). Points North operation on Portage Creek was the biggest producer of gold in the Circle district in 1994 (Swainbank and others, 1994, p. 28).

Ten ounces of gold were reportedly recovered from one claim on the creek in 1906 (Brooks, 1907, p. 198) and various mines have been operating on and off to the present. Points North operation on Portage Creek was the biggest producer of gold in the Circle district in 1994 (Swainbank and others, 1994, p. 28).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; medium

**Site Status:** Active

**Workings/exploration:**

Gold was not discovered on the creek until the early 1900's (Brooks, 1907). Full-scale mining did not begin on the creek until 1933. Two miners worked the upper valley in 1936. One operation consisted of drift mining and one was a prospecting shaft (Mertie, 1938). Gravel valued at 0.025 to 0.0625 ounces per cubic yard was being mined in 1937 by several miners shoveling in an opencut (Lampright, 1996, p. 74). There were two operations on the creek in 1975 and anywhere from two to five operations per year during the 1980's (Yeend, 1991). Points North operation on Portage Creek was the biggest producer of gold in the Circle district in 1994 (Swainbank and others, 1994, p. 28).

**Production notes:**

Ten ounces of gold were reportedly recovered from one claim on the creek in 1906 (Brooks, 1907, p. 198) and various mines have been operating on and off to the present. Points North operation on Portage Creek was the biggest producer of gold in the Circle district in 1994 (Swainbank and others, 1994, p. 28).

**Reserves:****Additional comments:**

There are two different Portage Creeks in the Circle mining district, both of which flow away from the same divide. One creek flows south-southwest and has not yielded gold. The Portage Creek discussed for this site flows north-northeast into Medicine Lake.

**References:**

Brooks, 1907; Ellsworth and Davenport, 1913; Chapin, 1914; Smith, 1934, B 864-A; Mertie, 1938; Smith, 1938, B 897-A; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Smith, 1942; Bates and Wedow, 1953; Wedow and others, 1953; Nelson and others, 1954; Wedow and others, 1954; Berg and Cobb, 1967; Overstreet, 1967; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Yeend, 1991; Swainbank and others, 1994; Lampright, 1996.

**Primary reference:** Lampright, 1996.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98



**Site name(s):** Ptarmigan Creek (tributary of Birch Creek)

**Site type:** Prospect

**ARDF no.:** CI048

**Latitude:** 65.44

**Quadrangle:** CI B-4

**Longitude:** 145.519

**Location description and accuracy:**

Ptarmigan Creek is a tributary of Birch Creek. It flows south from Porcupine Dome and crosses the Steese Highway in the NW1/4 NE1/4 sec. 17, T. 7 N., R. 11 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Headwaters of Ptarmigan Creek are on the south slopes of Porcupine Dome. Bedrock underlying Ptarmigan Creek is the Upper Quartzite and Upper Schist units mapped by Wiltse and others (1995). The Upper Quartzite consists of porphyroblastic-albite-chlorite-muscovite-quartz schist, quartzites and micaceous quartzites. The Upper Schist is a mixed unit dominated by variably garnetiferous, pelitic quartz-muscovite schist, muscovite-quartz schist and chlorite-quartz-muscovite schist with distinct intervals of garnetiferous calcareous albite-porphyroblastic muscovite-chlorite schist.

Sediments are said to contain large amounts of copper (Burand, 1965). Gold can be readily panned from the thin veneer of gravels on the bedrock in Ptarmigan Creek just upstream from its junction with Eagle Creek (Lampright, 1996, p. 75). Known years of activity are 1925, 1953, 1954 and 1969 through 1982 (Menzie and others, 1983, p. 51).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Gold placer deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** None**Site Status:** Inactive**Workings/exploration:**

Known years of activity are 1925, 1953, 1954 and 1969 through 1982 (Menzie and others, 1983, p. 51).

**Production notes:****Reserves:****Additional comments:****References:**

Burand, 1965; Menzie and others, 1983; Wiltse and others, 1995; Lampright, 1996.

**Primary reference:** Menzie and others, 1983.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)**Last report date:** 09/14/98

**Site name(s):** Ptarmigan Creek (tributary of Chatanika River)

**Site type:** Prospect

**ARDF no.:** CI049

**Latitude:** 65.248

**Quadrangle:** CI A-6

**Longitude:** 146.826

**Location description and accuracy:**

The location is the approximate position of claims on Ptarmigan Creek. Ptarmigan Creek is a tributary of the Chatanika River and is accessible where the creek crosses the Steese Highway. (This should not be confused with the other Ptarmigan Creek that is a tributary of Birch Creek, Circle quadrangle B-4).

**Commodities:**

**Main:** Au

**Other:** Ag

**Ore minerals:** Gold, silver

**Gangue minerals:**

**Geologic description:**

There is little gravel, but good colors can be panned from the lower part of the creek (Menzie and others, 1983, p. 51). A trace-element study showed 28 percent Ag in a sample of placer gold from Ptarmigan Creek (Yeend, 1985, p. 6).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Known surface activity in 1981(Menzie and others, 1983, p. 51).

**Production notes:****Reserves:****Additional comments:**

The Ptarmigan Creek discussed for this record is a tributary of the Chatanika River. Another Ptarmigan Creek is located further up the Steese Highway and is a tributary of Birch Creek (see Ptarmigan Creek, tributary of Birch Creek, ARDF no. CI048).

**References:**

Menzie and others, 1983; Yeend, 1985.

**Primary reference:** Menzie and others, 1983; Yeend, 1985.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 06/25/98

**Site name(s):** Rebel Creek

**Site type:** Mine

**ARDF no.:** CI050

**Latitude:** 65.529

**Quadrangle:** CI C-3

**Longitude:** 145.433

**Location description and accuracy:**

The location is midway up Rebel Creek from its confluence with Bonanza Creek, about 2 miles ENE of the top of Porcupine Dome.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Bedrock in the Bonanza Creek drainage is the Lower Schist unit described by Wiltse and others (1995) as a slightly calcareous quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist and lesser amounts of quartzose porphyroblastic-albite-chlorite schist. In the Bonanza Creek drainage, Freeman and others (1988, p. 14), mapped precious metal mineralization, sulfide mineralization, minor stockwork silicification and quartz-sericite-sulfide alteration of Bonanza Creek sequence rocks which include metaquartzite, pelitic calc-schist and metavolcanic schist. Detailed descriptions of alteration were not completed for Rebel Creek.

During 1988 placer gold was examined from Rebel Creek just above its confluence with Bonanza Creek. The gold was very fresh and angular and was dominantly wire gold with some small nuggets. Flakes were distinctly absent (Freeman and others, 1988).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes**Site Status:** Inactive**Workings/exploration:**

Small scale placer operations were active in the 1980's.

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:****References:**

Freeman and others, 1988; Wiltse and others, 1995.

**Primary reference:** Freeman and others, 1988.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)**Last report date:** 09/14/98

**Site name(s):** Roy Creek; Little Champion Creek

**Site type:** Prospect

**ARDF no.:** CI051

**Latitude:** 65.438

**Quadrangle:** CI B-6

**Longitude:** 146.588

**Location description and accuracy:**

The location is the approximate center of a large claim group along the NW margin of the Mt. Prindle pluton. This record is a general description of the Mt. Prindle pluton uranium occurrences. Separate entries for individual sites are as follows: ARDF no. CI076, CI067, and CI069.

**Commodities:**

**Main:** U

**Other:** REE

**Ore minerals:** Allanite, bastnaesite, monazite, thorianite, thorite, uraninite, xenotime

**Gangue minerals:** Topaz, tourmaline

**Geologic description:**

This area contains significant uranium-rare earth mineralization. There are numerous uranium prospects, uraniferous springs and stream-sediments in the area (Barker and Clautice, 1977). Mt. Prindle pluton is a tourmaline- and topaz-bearing porphyritic biotite granite that crops out over a 50-square-km area. Country rock is quartzite and micaceous quartzite with subordinate quartz-mica schist, phyllitic schist and calcareous schist, thermally metamorphosed to upper hornblende facies near the pluton contact. The pluton is cut by 3 major NE-trending faults, and several quartz porphyry, aplite and pegmatite dikes.

Fissure veins containing allanite, bastnaesite, monazite, thorianite, thorite, uraninite, and xenotime occur in Cretaceous porphyritic biotite syenite and alkali granite. The deposit contains significant La, Cd, Nd, Pr, Yd, and fluorite. Hematitic alteration of wall rock and leaching of magnetite occurs in host rocks. Samples contain up to 0.1 percent U-308 and 15 percent rare-earth elements (Burton, 1981).

Some exploration and limited drilling was carried out on Little Champion Creek, but no further development has taken place. Claims were active from 1977 through at least 1981 (Menzie and others, 1983, p. 56).

**Alteration:**

There is hematitic alteration of wall rock and leaching of magnetite in host rocks (Burton, 1981).

**Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Some exploration and limited drilling was carried out on Little Champion Creek, but no further development has taken place. Claims were active from 1977 through at least 1981 (Menzie and others, 1983, p. 56).

**Production notes:****Reserves:****Additional comments:****References:**

Holm, 1973; Barker and Clautice, 1977; Burton, 1981; Menzie and others, 1983; Bundtzen and others, 1986; Nokleberg and others, 1987.

**Primary reference:** Burton, 1981.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98



**Site name(s):** Shamrock Creek

**Site type:** Mine

**ARDF no.:** CI052

**Latitude:** 65.015

**Quadrangle:** CI A-3

**Longitude:** 145.423

**Location description and accuracy:**

The location is the approximate center of a discontinuous placered area about three quarters of a mile long along Shamrock Creek. Shamrock Creek is a tributary to the Middle Fork, Chena River.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Bedrock is schist of Paleozoic and/or Precambrian(?) age (Eberlein and others, 1977, p. 24). Placer gold has been mined. Small scale suction dredge used in 1980. Years of known activity are 1924, 1938 to 1939, 1966, 1968 to 1972, and 1976 (Menzie and others, 1983, p. 51).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Small scale suction dredge used in 1980. Years of known activity are 1924, 1938 to 1939, 1966, 1968 to 1972, and 1976 (Menzie and others, 1983, p. 51).

**Production notes:**

Mining has been reported (see workings/exploration); however, amount of production is unknown.

**Reserves:****Additional comments:**

See also Palmer Creek, ARDF no. CI044 and Van Culers Bar, ARDF no. CI087.

**References:**

Smith, 1939, B 917-A; Smith, 1941; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Lampright, 1996.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Sorrels Creek**Site type:** Prospect**ARDF no.:** CI053**Latitude:** 65.133**Quadrangle:** CI A-6**Longitude:** 146.845**Location description and accuracy:**

The location is the approximate middle reach of Sorrels Creek above the Elliot Creek/Sorrels Creek confluence. Sorrels Creek is a tributary of the Little Chena River. Gold sampling has occurred all along Sorrels Creek (R. Hughes, oral commun., 1998).

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Bedrock in the Sorrels Creek drainage is mafic schist in the upper headwaters region and quartzite and quartzitic schists along the rest of the creek (Foster and others, 1983). Gold sampling occurred all along Sorrels Creek. In 1983, backhoe trenching and pits were excavated to a depth of twelve feet. Gold was recovered in gold screw samples. There is also evidence for old drift mines (R. Hughes, oral commun., 1998).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Gold sampling has occurred all along Sorrels Creek. In 1983, backhoe trenching and pits were excavated to a depth of twelve feet. Gold was recovered in gold screw samples. There is also evidence for old drift mines (R. Hughes, oral commun., 1998).

**Production notes:**

There is evidence of old drift mines (R. Hughes, oral commun., 1998); however, amount of production is unknown.

**Reserves:**

**Additional comments:**

**References:**

**Primary reference:** R. Hughes, oral commun., 1998.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s): Sourdough Creek****Site type:** Prospect**ARDF no.:** CI054**Latitude:** 65.33**Quadrangle:** CI B-5**Longitude:** 146.473**Location description and accuracy:**

The location is the approximate center of discontinuous placer workings that extend from Silver Creek to Polar Creek; from the mouth of Bear Creek upstream for about 1,500 ft; and for about a mile between Bear Creek and Ruby Creek. Sourdough Creek is a tributary of the Chatanika River. The creek can be accessed from the Steese Highway at mile marker 66.

**Commodities:****Main:** Au**Other:** Sb, Sn, W**Ore minerals:** Cassiterite, gold, scheelite, stibnite**Gangue minerals:****Geologic description:**

Bedrock in the area is schist, and, near the mouth of the creek a granitic pluton (Wedow and others, 1954, p. 8). A sample of granite talus contained stibnite and scheelite (Nelson and others, 1954). Joesting (1942) reported stibnite in placer concentrates and scarce cassiterite in placers.

Placer gold was mined from 1932 to 1940 and intermittently from 1946 to 1959. Gravel is ten to eleven feet thick. Prospecting and maintenance work occurred in 1966. The creek has largely been mined out by surface workings (Eberlein and others, 1977, p. 24).

Total production is not known, but about 2850 oz gold was reportedly produced from 1937 to 1941. A few blocks of unmined ground remain mid-valley but the creek has been largely mined. Two hundred ounces of gold was produced from one 300 ft by 150 ft cut on the Discovery Claim (Eberlein and others, 1977, p. 24).

**Alteration:****Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

Placer gold was mined from 1932 to 1940 and intermittently from 1946 to 1959. Prospecting and maintenance work occurred in 1966. The creek has largely been mined out by surface workings (Eberlein and others, 1977, p. 24).

**Production notes:**

Total production is not known, but about 2850 oz gold was reportedly produced from 1937 to 1941. A few blocks of unmined ground remain mid-valley but the creek has been largely mined. Two hundred ounces of gold was produced from one 300 ft by 150 ft cut on the Discovery Claim (Eberlein and others, 1977, p. 24).

**Reserves:****Additional comments:****References:**

Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936, B 868-A; Smith, 1937; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Smith, 1942; Nelson and others, 1954; Wedow and others, 1954; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Lampright, 1996.

**Primary reference:** Eberlein and others, 1977.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s): Squaw Creek; Squaw Gulch****Site type:** Mine**ARDF no.:** CI055**Latitude:** 65.388**Quadrangle:** CI B-2**Longitude:** 144.909**Location description and accuracy:**

The location is the approximate midreach of Squaw creek. Squaw Creek is a tributary of Harrison Creek, which itself is a tributary of Birch Creek. Eberlein and others (1977) reported 'recent' placer mining at the junction of Harrison Creek and Squaw Creek.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Squaw Creek is underlain by quartzose porphyroblastic-albite-chlorite schist and chlorite schist - part of the Lower Schist unit described by Wiltse and others (1995).

The steep gradient of Squaw Creek results in a narrow flood plain, less than 30 meters wide, with coarse gravel and boulders as much as 1 meter in diameter (Yeend, 1991, p. 29). The coarse gold recovered included some one-ounce nuggets. Fine gold was rare, having been flushed into Harrison Creek where the gradient is lower. Values of 0.0125 to 0.0375 ounces per cubic yard were being recovered in 1981, just below the upper forks of Squaw Creek. Unmined gravel remains only in the uppermost Squaw Creek drainage where the gravel is very coarse (Yeend, 1991).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Gold was discovered on Squaw Creek in 1894 (Brooks and others, 1907), but information about early mining on the creek has not been found. Considerable mining occurred on the creek in the late 1970's and early 1980's (Yeend, 1991).

**Production notes:**

Values of 0.0125 to 0.0375 ounces per cubic yard were being recovered in 1981, just below the upper forks of Squaw Creek (Yeend, 1991).

**Reserves:**

**Additional comments:**

Squaw Creek was originally named Squaw Gulch on early maps (Spurr, 1898, Dunham, 1898).

**References:**

Spurr, 1898; Dunham, 1898; Brooks, 1907, B 314; Prindle, 1913; Mertie, 1932; Cobb, 1972, MF-391; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Switch Creek**Site type:** Mine**ARDF no.:** CI056**Latitude:** 65.468**Quadrangle:** CI B-2**Longitude:** 144.892**Location description and accuracy:**

The location is the approximate center of mining on Switch Creek. The placered area extends about 3,500 ft up and down stream from the intersection of the coordinates.

Switch Creek is a tributary of Deadwood Creek.

**Commodities:****Main:** Au**Other:** As, Pb, W**Ore minerals:** Arsenopyrite, galena, gold, ilmenite, limonite, magnetite, pyrite, scheelite**Gangue minerals:** Garnet, quartz, tourmaline**Geologic description:**

Headwaters of Switch Creek drain both Cretaceous biotite monzogranite and calcareous quartz-muscovite schist (Wiltse and others, 1995).

Both flood-plain and bench gravels have been mined. A bench on the west side of the creek in the lower valley is 12 to 15 meters above the creek bed. Remnants of other benches upvalley are sites of former mining operations (Mertie, 1938). The gravel on the benches is composed of cobbles and a few boulders. Boulders are fairly common in the present valley (Yeend, 1991). Gold has been concentrated within the lower 1 meter above of bedrock. The largest nugget found was 4 ounces (Mertie, 1938). Weighted mean of eight assays showed fineness of 760 Au and 231 Ag (Mertie, 1938). Johnson (1910), reported arsenopyrite in quartz-feldspar veins, and concentrates containing gold, arsenopyrite, pyrite, galena, cassiterite, ilmenite, garnet, tourmaline, limonite, and quartz. Gold has been mined sporadically on Switch Creek since 1906. Initially, opencut and drifting were the only mining methods used. Once hydraulic mining was introduced in 1922, it was the predominant mining method used on the creeks through the 1930's (Mertie, 1938). Both surface and underground work took place. Drift mining occurred on benches while hydraulic mining was used on creek gravels (Menzie and others, 1983, p. 52).

**Alteration:**

**Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small**Site Status:** Inactive**Workings/exploration:**

Gold has been mined sporadically on Switch Creek since 1906. Initially, opencut and drifting were the only mining methods used. Once hydraulic mining was introduced in 1922, it was the predominant mining method used on the creeks through the 1930's (Mertie, 1938). Both surface and underground work took place. Drift mining occurred on benches while hydraulic mining was used on creek gravels (Menzie and others, 1983, p. 52).

**Production notes:**

Mining has been reported (see workings/exploration), however, amount of production is unknown.

**Reserves:****Additional comments:**

See also Deadwood Creek, ARDF no. CI014.

**References:**

Prindle, 1905; Prindle, 1906, B 284; Brooks, 1907, B 314; Ellsworth, 1910; Johnson, 1910; Ellsworth and Parker, 1911; Ellsworth, 1912; Ellsworth and Davenport, 1913; Prindle, 1913; Brooks, 1915; Brooks, 1916; Brooks, 1918; Mertie, 1932; Smith, 1932; Smith, 1933, B 836; Smith, 1933, B 844-A; Smith, 1934, B 857-A; Smith, 1934, B 864-A; Smith, 1936; Smith, 1937; Mertie, 1938; Smith, 1938, 897-A; Smith, 1939, B 910-A; Smith, 1939, B 917-A; Smith, 1941; Joesting, 1942; Wedow and others, 1954; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Eberlein and others, 1977; Menzie and others, 1983; Yeend, 1991; Wiltse and others, 1995.

**Primary reference:** Menzie and others, 1983.**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s): Table Mountain****Site type:** Prospect**ARDF no.:** CI057**Latitude:** 65.447**Quadrangle:** CI B-4**Longitude:** 145.915**Location description and accuracy:**

This location is approximately 3/4 km west of Table Mountain summit. The prospect is on black biotite schist that contains up to 140 ppm gold (Menzie and others, 1987).

Table Mountain is located approximately 4 miles NE of Twelve Mile Summit along the Pinnel Mountain trail, in sec. 9, T. 7 N., R. 9 E.

**Commodities:****Main:** Au**Other:** Cu, Zn**Ore minerals:** Arsenopyrite, chalcopyrite, enargite, gold, pyrrhotite, sphalerite**Gangue minerals:** Biotite, quartz, tourmaline**Geologic description:**

The metamorphic rocks in the Table Mountain area belong to the quartzite and quartzitic schist unit of Foster and others (1983) and are composed of light gray quartzite, black biotite schist, fine-grained greenish-gray mafic rocks and light-greenish-gray calc-silicate rocks (Burack, 1983). Granite crops out over an area of only about 2 square km, but the distribution of contact metamorphosed rocks suggests that granite underlies much of the Table Mountain area at relatively shallow depths (Burack, 1983).

Menzie and others (1987), reported that the highest concentrations of gold (2.6 to 140 ppm) occur just west of Table Mountain in black biotite schist and in quartz veins adjacent to a fault zone (breccia in granite) that is intruded by a sulfide-bearing hypabyssal felsic dike. Gold was detected in lesser amounts (0.05 to 0.2 ppm) in country rocks adjacent to a granite pluton that crops out five km to the northeast of the black biotite schist. The occurrences contain pyrrhotite, arsenopyrite, minor chalcopyrite, and rare enargite and sphalerite (Menzie and others, 1987, p. 1).

The Table Mountain occurrences show traces of silver and low levels of tin in the hypabyssal dike and in an iron-stained sample of the breccia. Two samples of a quartz vein containing sulfides along the vein walls both contained high values of gold, arsenic, and copper. Antimony was detected in both samples (Menzie and others, 1987, p. 4).

In the occurrences in and adjacent to the granite, gold was detected only in the sulfide-

bearing hypabyssal felsic dike. Silver and tin were detected in the dike and in the granite adjacent to the dike. A sample of this dike without sulfides contained detectable tin but not gold or silver. A sample of quartzite from adjacent to the pluton did not contain gold, silver, or tin in detectable amounts (Menzie and others, 1987, p. 4).

In 1986, Alaska Division of Geological and Geophysical Surveys collected samples of auriferous tourmaline-quartz veins and hornfelsed biotite-tourmaline schists from the Table Mountain area. Field work in 1987 showed that the biotite-tourmaline schists and tourmaline-quartz veins are present throughout much of the north side of Table Mountain and that they are not restricted to fault zones. The widespread distribution of these veins is attributed either to (1) remobilization from stratiform occurrences or (2) hydrothermal mineralization associated with nearby abundant felsite dikes. These widespread occurrences suggest that this area has significant lode gold potential (Smith and others, 1987, p. 6-15).

Claims were active in 1981, but type of work is unknown (Menzie and others, 1983).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface rock samples taken. Claims were active in 1981 but type of work is unknown (Menzie and others, 1983).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Menzie and others, 1983; Menzie and others, 1987; Smith and others, 1987.

**Primary reference:** Menzie and others, 1987.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

Last report date: 09/14/98

**Site name(s):** Top Dollar

**Site type:** Occurrence

**ARDF no.:** CI058

**Latitude:** 65.443

**Quadrangle:** CI B-2

**Longitude:** 144.756

**Location description and accuracy:**

The location is the approximate center of 20 mining claims located 6.5 road miles from Circle Hot Springs via the Portage Creek road.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Arsenopyrite, gold

**Gangue minerals:** Quartz

**Geologic description:**

The Top Dollar (TD) claims are situated in the Paleozoic metamorphic rocks intruded by Cretaceous to Tertiary granitic rocks that constitute part of the Yukon-Tanana Uplands metamorphic terrane. The region is transected by regional-scale, northeast-trending shear zones and northeast-trending mafic dikes.

Gold mineralization has been observed in the form of gold-arsenopyrite-quartz veins and stockwork zones in host rocks consisting of massive, hornfelsed, micaceous quartzite and schist. The zones are near to the intrusive contact of the Cretaceous 'Two Bit' granite pluton, possibly in mineralized pendants above the pluton. Rock grab samples contain up to 14 ppm gold, highly anomalous arsenic and antimony, and variably anomalous bismuth and base metals (D.D. Adams, written commun., 1998).

**Alteration:**

Silicification, quartz-sericite, chlorite, and iron-oxides.

**Age of mineralization:**

**Deposit model:**

Gold-arsenopyrite veins in hornfels and schist.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Active

**Workings/exploration:**

Surface samples taken (D.D. Adams, written commun., 1998).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

**Primary reference:** Unpublished data, Spectrum Resources, Inc.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Traverse Creek

**Site type:** Occurrence

**ARDF no.:** CI059

**Latitude:** 65.39

**Quadrangle:** CI B-2

**Longitude:** 144.712

**Location description and accuracy:**

The location is the junction of Traverse Creek and Harrison Creek, NW1/4 SW1/4 sec. 32, T. 7 N., R. 15 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Bedrock underlying Traverse Creek is the Lower Schist unit described by Wiltse and others (1995) as a slightly calcareous quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose porphyroblastic-albite-chlorite schist. Gold can be panned from the gravel in Traverse Creek, but the drainage has a steep gradient and contains little gravel (Yeend, 1991).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Gold placer deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Yeend, 1991; Wiltse and others, 1995; Lampright, 1996.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Twelvemile Prospect

**Site type:** Prospect

**ARDF no.:** CI060

**Latitude:** 65.715

**Quadrangle:** CI C-1

**Longitude:** 144.313

**Location description and accuracy:**

Twelvemile Prospect is located along the north side of the Steese Highway near Twelvemile House, on the east side of Birch Creek, in the NE1/4 sec.12, T. 10 N., R. 16 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

Twelvemile Prospect is a placer Au prospect consists of gold-bearing quartz fragments in well-rounded and well-sorted alluvial gravels (R. Vetter, oral commun., 1998).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:****Reserves:****Additional comments:****References:**

**Primary reference:** R. Vetter, oral commun., 1998.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 07/06/98

**Site name(s):** Unnamed**Site type:** Occurrence**ARDF no.:** CI061**Latitude:** 65.466**Quadrangle:** CI B-2**Longitude:** 144.929**Location description and accuracy:**

The location is a short distance below the junction of Deadwood Creek and Discovery Gulch, on a wolframite-bearing vein in a prospect hole (Johnson, 1910, p. 248).

**Commodities:****Main:** W**Other:****Ore minerals:** Wolframite**Gangue minerals:****Geologic description:**

This occurrence is an unconfirmed report of a wolframite-bearing vein in a prospect hole sunk when the high bench gravels were being prospected for gold. Wolframite has been found in placers below the mouth of Discovery Gulch (Johnson, 1910, p. 248). This wolframite-bearing vein is within the Lower Schist bedrock unit described by Wiltse and others (1995) as a medium to dark gray and medium greenish-gray, fine- to medium-grained, commonly slightly calcareous quartz-muscovite schist, with lesser amounts of quartzose porphyroblastic albite-chlorite schist and chlorite schist.

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

14a

**Production Status** None**Site Status:** Inactive

**Workings/exploration:**

A prospect hole was dug around 1908 in a placer deposit that uncovered the wolframite vein, but was caved in by 1909 (Johnson, 1910).

**Production notes:****Reserves:****Additional comments:****References:**

Brooks, 1910; Johnson, 1910; Menzie and others, 1983.

**Primary reference:** Johnson, 1910 in Brooks, 1910.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed**Site type:** Occurrence**ARDF no.:** CI062**Latitude:** 65.003**Quadrangle:** CI A-2**Longitude:** 144.943**Location description and accuracy:**

The location is the site of sample no. 2897, plate 1 of the Alaska Division of Geological and Geophysical Surveys Report of Investigations 84-4 (Albanese, 1984). It is approximately 2 miles east of VABM 4113 in the southern headwaters of the Middle Fork of the Chena River.

**Commodities:****Main:** W**Other:****Ore minerals:** Unknown**Gangue minerals:****Geologic description:**

A sulfide-bearing rock adjacent to a calc-silicate rock showed greater than 1,000 ppm W (Albanese, 1984).

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:****References:**

Albanese, 1984.

**Primary reference:** Albanese, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Unnamed

**Site type:** Occurrence

**ARDF no.:** CI063

**Latitude:** 65.042

**Quadrangle:** CI A-2

**Longitude:** 144.586

**Location description and accuracy:**

The location is the site of sample no. 3288, plate 1 of the Alaska Division of Geology and Geophysical Surveys Report of Investigations 84-4 (Albanese, 1984). It is approximately 2.5 miles west of Little Windy Gulch, upper Salcha River.

**Commodities:**

**Main:** Sn

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

A sulfide-bearing layer in quartzite carries 220 ppm tin (Albanese, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:****Additional comments:****References:**

Albanese, 1984.

**Primary reference:** Albanese, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed**Site type:** Occurrence**ARDF no.:** CI064**Latitude:** 65.0892**Quadrangle:** CI A-2**Longitude:** 144.633**Location description and accuracy:**

The location is the site of sample nos. 18014 and 18015, plate 1, of the Alaska Division of Geological and Geophysical Surveys Report of Investigations 84-4 (Albanese, 1984). This is a ridgetop occurrence in the headwaters of the Middle Fork of the Chena River, approximately 13 miles NE of VABM 4113.

**Commodities:****Main:** W**Other:****Ore minerals:** Unknown**Gangue minerals:****Geologic description:**

A tungsten-bearing skarn. Two samples contained 190 ppm W and 435 ppm W (Albanese, 1984).

**Alteration:****Age of mineralization:****Deposit model:**

Tungsten skarn (Cox and Singer, 1986; model 14a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

14a

**Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Albanese, 1984.

**Primary reference:** Albanese, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed**Site type:** Occurrence**ARDF no.:** CI065**Latitude:** 65.439**Quadrangle:** CI B-2**Longitude:** 144.725**Location description and accuracy:**

The location is the site of sample no. 3MZ0007b, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 1 mile SW of VABM 3125, just SW of Circle Hot Springs.

**Commodities:****Main:** Au**Other:** Ag**Ore minerals:** Arsenopyrite (?)**Gangue minerals:****Geologic description:**

Sample of quartzite with arsenopyrite contains 3.2 ppm Au and 0.5 ppm Ag (Foster and others, 1984).

**Alteration:****Age of mineralization:****Deposit model:**

Auriferous arsenopyrite-bearing quartzite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed**Site type:** Occurrence**ARDF no.:** CI066**Latitude:** 65.44**Quadrangle:** CI B-4**Longitude:** 145.913**Location description and accuracy:**

The location is the site of sample no. 3090e, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is located on Table Mountain, along the Pinnel Mountain trail, NE1/4 NW1/4 sec. 16, T. 7 N., R. 9 E.

**Commodities:****Main:** Au**Other:****Ore minerals:** Unknown**Gangue minerals:****Geologic description:**

Quartzite carrying sulfides contains 0.05 ppm Au (Foster and others, 1984). Felsic dikes cut country rock consisting mostly of quartzite and quartzitic schist (Menzie and others, 1983, p. 57).

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:****References:**

Menzie and others, 1983; Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Unnamed

**Site type:** Occurrence

**ARDF no.:** CI067

**Latitude:** 65.449

**Quadrangle:** CI B-6

**Longitude:** 146.54

**Location description and accuracy:**

The location is the site of sample no. 41, figure 3, of U.S. Bureau of Mines Open-File Report 130-77 (Barker and Clautice, 1977). Approximately 1 mile SW of Mt. Prindle, SW1/4 NW1/4 sec. 9, T. 7 N., R. 6 E.

**Commodities:**

**Main:** U

**Other:** Th

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

20 ppm U and 17.3 ppm Th (225 cps) were detected in granite bedrock. The host rock is described as granite with feldspar phenocrysts up to 7 cm (Barker and Clautice, 1977).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Uranium and thorium in granite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:**

See also Roy Creek, ARDF no. CI051.

**References:**

Barker and Clautice, 1977.

**Primary reference:** Barker and Clautice, 1977.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed**Site type:** Occurrence**ARDF no.:** CI068**Latitude:** 65.482**Quadrangle:** CI B-4**Longitude:** 145.807**Location description and accuracy:**

The location is the site of sample no. 3139j, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 4.3 miles NE of Table Mountain along the Pinnel Mountain trail, NE1/4 NW1/4 sec. 36, T. 8 N., R. 9 E.

**Commodities:****Main:** Au**Other:****Ore minerals:** Unknown**Gangue minerals:****Geologic description:**

0.2 ppm Au was detected in gray, sulfide-bearing quartzite which is adjacent to a small granitic intrusive (Foster and others, 1984). Country rocks are Precambrian and/or Paleozoic quartzite and quartzitic schists intruded and contact metamorphosed by an upper Cretaceous to lower Tertiary granitic pluton. The area is cut by a left-lateral fault and was intruded by felsic hypabyssal rocks, probably in the early Tertiary.

**Alteration:****Age of mineralization:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

See also Table Mountain, ARDF no. CI057.

**References:**

Menzie and others, 1983; Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed

**Site type:** Occurrence

**ARDF no.:** CI069

**Latitude:** 65.492

**Quadrangle:** CI B-6

**Longitude:** 146.642

**Location description and accuracy:**

The location is the site of sample no. 36, U.S. Bureau of Mines Open-File Report 130-77 (Barker and Clautice, 1977). This is a ridgetop occurrence approximately 5.5 miles WNW of Mt. Prindle, SW1/4 NW1/4 sec. 25, T. 8 N., R. 5 E.

**Commodities:**

**Main:** U

**Other:** Th

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

A sample containing 22 ppm U and 3 ppm Th was collected from iron-stained quartzose country rock, and sample containing 24 ppm U and 29 ppm Th was collected from a dike containing dark quartz, feldspar and biotite in an aphanitic ground mass (Barker and Clautice, 1977).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:****References:**

Barker and Clautice, 1977.

**Primary reference:** Barker and Clautice, 1977.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (between Table and Pinnell Mountains)

**Site type:** Occurrence

**ARDF no.:** CI070

**Latitude:** 65.472

**Quadrangle:** CI B-4

**Longitude:** 145.825

**Location description and accuracy:**

The location is the site of sample no. 3126e, plate 1, of U.S Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 3 miles NE of Table Mountain along the Pinnel Mountain trail, SE1/4 SE1/4 sec. 35, T. 8 N., R. 9 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

0.1 ppm Au was detected in black biotite schist containing sulfides near a contact with a small granitic pluton (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Gold in black biotite schist.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:**

See also Table Mountain, ARDF no. CI057.

**References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Unnamed (between Table and Pinnell Mountains)

**Site type:** Occurrence

**ARDF no.:** CI071

**Latitude:** 65.473

**Quadrangle:** CI B-4

**Longitude:** 145.816

**Location description and accuracy:**

The location is the site of sample no. 3124, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 3 miles NE of Table Mountain along the Pinnel Mountain trail, NW 1/4 SW 1/4 sec. 36, T. 8 N., R. 9 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

0.05 ppm Au was detected in black biotite schist adjacent to a granitic intrusive (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:****Additional comments:**

See also Table Mountain, ARDF no. CI057.

**References:**

Foster and others, 1984.

**Primary reference:**

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 06/29/98

**Site name(s):** Unnamed (between Table and Pinnell Mountains)

**Site type:** Occurrence

**ARDF no.:** CI072

**Latitude:** 65.477

**Quadrangle:** CI B-4

**Longitude:** 145.815

**Location description and accuracy:**

The location is the site of sample no. 3148f, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 3 miles NE of Table Mountain along the Pinnel Mountain trail, NW1/4 SW1/4 sec. 36, T. 8 N., R. 9 E.

**Commodities:**

**Main:** Au

**Other:** Ag, Sn

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

Granite samples contained 0.2 ppm Au, 2 ppm Ag and 50 ppm Sn (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:****Additional comments:**

See also Table Mountain, ARDF no. CI057.

**References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 06/29/98

**Site name(s):** Unnamed (between Table and Pinnell Mountains)

**Site type:** Occurrence

**ARDF no.:** CI073

**Latitude:** 65.478

**Quadrangle:** CI B-2

**Longitude:** 144.897

**Location description and accuracy:**

The site is location no. 4689, figure 4, of U.S. Geological Survey Circular 348. It is on Deadwood Creek, 25 miles below Switch Creek SE1/4 NE1/4 sec. 32, T. 8 N., R. 14 E. (Nelson and others, 1954).

**Commodities:**

**Main:** Sn

**Other:**

**Ore minerals:** Cassiterite

**Gangue minerals:**

**Geologic description:**

The heavy mineral fraction of a vein in granite contained 1% cassiterite, 35% goethite, 40% hematite, 22% ilmenite, 1% pyrite, 1% zircon and 0.005% Eu (Nelson and others, 1954).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:**

See also Deadwood Creek, ARDF no. CI014.

**References:**

Nelson and others, 1954; Menzie and others, 1983.

**Primary reference:** Nelson and others, 1954.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (headwaters of Independence Creek)

**Site type:** Occurrence

**ARDF no.:** CI074

**Latitude:** 65.458

**Quadrangle:** CI B-3

**Longitude:** 145.221

**Location description and accuracy:**

The location is the site of sample no. 3MZ0036e, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is NE of Mastodon Dome on the eastern ridge above Independence Creek, SE 1/4 SW 1/4 sec. 2, T. 7 N., R. 12 E.

**Commodities:**

**Main:** Ag

**Other:** Pb

**Ore minerals:** Arsenopyrite (?), galena(?)

**Gangue minerals:**

**Geologic description:**

Galena(?), arsenopyrite(?) and gold-colored sulfides were found along the margin of a vuggy, milky-white quartz vein in brecciated silicified country rock. Samples showed 15 ppm Ag and 1,500 ppm Pb (Foster and others, 1984). Bedrock in the Independence Creek drainage is the Lower Schist unit described by Wiltse and others (1995) as a medium to dark gray and medium greenish-gray, fine- to medium-grained, commonly slightly calcareous quartz-muscovite schist, with lesser amounts of quartzose porphyroblastic albite-chlorite schist and chlorite schist. The bedrock is cut by numerous quartz veins.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Unnamed (headwaters of Nome Creek)

**Site type:** Prospect

**ARDF no.:** CI075

**Latitude:** 65.455

**Quadrangle:** CI B-6

**Longitude:** 146.509

**Location description and accuracy:**

The location is the site of sample 9FR438, plate 1, U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 2 miles SW of Mt. Prindle, NE1/4 NE1/4 sec. 9, T. 7 N., R. 6 E.

**Commodities:**

**Main:** Ag

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

A large gossan zone was explored for silver. The gossan is near the contact between the Mt. Prindle pluton and schistose country rock (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Active

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:****Additional comments:**

See also Roy Creek, ARDF no. CI051.

**References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (in headwaters of Little Champion Creek)

**Site type:** Occurrence

**ARDF no.:** CI076

**Latitude:** 65.428

**Quadrangle:** CI B-6

**Longitude:** 146.592

**Location description and accuracy:**

The site is location no. 43, fig. 3, of U.S. Bureau of Mines Open-File Report 130-77 (Barker and Clautice, 1977), in the headwaters of the Little Champion Creek approximately 4.5 miles SW of Mt. Prindle.

**Commodities:**

**Main:** U

**Other:** Th

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

Uranium and thorium detected in coarse-grained biotite granite. Samples showed 17 ppm U, 14.5 ppm Th, 200cps (Barker and Clautice, 1977).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Uranium and thorium in granite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:**

See also Roy Creek, ARDF no. CI051.

**References:**

Barker and Clautice, 1977.

**Primary reference:** Barker and Clautice, 1977.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (near head of Big Windy Creek)

**Site type:** Occurrence

**ARDF no.:** CI077

**Latitude:** 65.126

**Quadrangle:** CI A-2

**Longitude:** 144.92

**Location description and accuracy:**

The location is sample no. 18012, plate 1, of the Alaska Division of Geological and Geophysical Surveys Report of Investigations 84-4 (Albanese, 1984). This is a ridgetop occurrence between the Middle Fork Chena River drainage and the Big Windy Creek drainage, SW1/4 SW1/4 sec. 33, T. 4 N., R. 14 E.

**Commodities:**

**Main:** Mo

**Other:**

**Ore minerals:** Molybdenite (?)

**Gangue minerals:**

**Geologic description:**

Tourmaline-quartz-white mica-molybdenite (?) veinlets contain 348 ppm Mo (Albanese, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Molybdenum-bearing quartz veinlets.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:****References:**

Albanese, 1984.

**Primary reference:** Albanese, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (near head of Hope Creek)

**Site type:** Occurrence

**ARDF no.:** CI078

**Latitude:** 65.418

**Quadrangle:** CI B-6

**Longitude:** 146.502

**Location description and accuracy:**

Occurrence is sample number 025, in Holm (1973). The sample is located on the north headwater fork of Hope Creek, NW1/4 SW1/4 sec. 22, T. 7 N., R. 6 E.

**Commodities:**

**Main:** F

**Other:** Cu, Mo, Pb, REE (?), Sb, W, Zn

**Ore minerals:** Allanite (?), arsenopyrite, chalcopyrite, fluorite, galena, malachite, marcasite, molybdenite, pyrite, pyrrhotite, scheelite, stibnite, sphalerite

**Gangue minerals:** Rutile

**Geologic description:**

The occurrence is a 15-cm-wide fluorite vein in a fine-grained quartz- and opal-bearing breccia zone in a contact phase of biotite granite. Minor sulfide mineralization occurs in carbonate-bearing metamorphic rocks at the head of Hope Creek. Sulfides present are pyrrhotite, marcasite, and sphalerite with blebs of chalcopyrite, pyrite and arsenopyrite. None of these minerals occurs in quantities of economic significance. Samples of granite taken near the head of Hope Creek contained trace to small amounts of allanite (?), fluorite, galena, malachite, molybdenite, pyrite, pyrrhotite, rutile, scheelite and stibnite (Holm, 1973). Biotite from this granite has been dated at 59.5 +/- 1.8 m.a. by the K/Ar method (Holm, 1973).

**Alteration:**

**Age of mineralization:**

The principal occurrence is a fluorite vein in a fine-grained quartz- and opal-bearing breccia zone in a contact phase of biotite granite. The biotite in the granite has been dated at 59.5 +/- 1.8 m.a. by the K/Ar method (Holm, 1973).

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Nelson and others, 1954; Holm, 1973; Foster and others, 1983; Menzie and others, 1983.

**Primary reference:** Holm, 1973.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98



**Site name(s):** Unnamed, near Lime Peak Pluton (Rocky Mountain)

**Site type:** Prospect

**ARDF no.:** CI079

**Latitude:** 65.635

**Quadrangle:** CI C-6

**Longitude:** 146.7

**Location description and accuracy:**

The location given is the approximate center of tin mineralization within the Lime Peak pluton. It is about 1.6 mi due east of VABM Mascot. Lime Peak, also identified more recently as 'Rocky Mountain' is approximately 58 miles northeast of Fairbanks in the White Mountains. There is no road access to the area. The Steese Highway is located 30 miles to the southeast and existing winter trails extend from it into the area.

**Commodities:**

**Main:** Sn

**Other:** Ag, Cu, Mo, U, W, Zn

**Ore minerals:** Cassiterite (?), chalcopyrite, molybdenite, pyrite

**Gangue minerals:** Chlorite, fluorite, quartz, sericite, topaz, tourmaline

**Geologic description:**

The Lime Peak pluton is one of five lower Tertiary and/or Upper Cretaceous plutons exposed in the White Mountains (Foster and others, 1983). The Lime Peak pluton is a composite intrusion comprising at least three plutonic phases cut by two sets of north-trending dikes (Burton and others, 1985). The most abundant rock type is medium- to coarse-grained, equigranular to porphyritic, biotite granite that contains approximately 35 percent smoky quartz, 40 percent orthoclase, 20 percent albitic plagioclase, 5 percent biotite and trace to minor amounts of fluorite, apatite and zircon. Plagioclase, quartz and biotite occur as subhedral, embayed crystals surrounded by larger anhedral orthoclase phenocrysts. This unit commonly forms tors that line ridgetops in the Lime Peak area. The second most abundant intrusive phase is leucocratic, fine-grained, hypidiomorphic granular, seriate biotite granite that is found along the margins of, and in scattered outcrops within, the Lime Peak pluton. The third unit is a small body of moderately coarse-grained equigranular muscovite granite composed of approximately 40 percent smoky quartz, 30 percent albitic plagioclase, 25 percent orthoclase, 4 percent muscovite, up to 2 percent tourmaline, and minor amounts of fluorite. This third unit outcrops at the southwestern end of the Lime Peak pluton. The Lime Peak pluton intrudes metasedimentary rocks, dominantly quartzite and argillite, of Precambrian and/or Paleozoic age (Burton

and others, 1985). Wilson and Shew (1981) obtained a K-Ar age of 56.7 m.a. for the granite, which intrudes sandstone, shale, and slate. The intrusion is exposed over 2500 vertical ft, and forms abundant rubble above 3500 ft elevation.

High tin values are concentrated in intensely altered biotite granite. Numerous occurrences of fault-controlled, tin-bearing greisen have been identified. The greisen is composed of quartz, chlorite, sericite, and minor amounts of fluorite, tourmaline, topaz, pyrite, chalcopyrite, and molybdenite; samples contain between 60 and 1560 ppm tin (Burton and others, 1985). Seven samples from separate occurrences along the ridge in section 3, T. 9 N., R. 5 E. (Warner and others, 1988) contained an average of 610 ppm Sn and 2.36 ppm Ag with values ranging from 220 to 1000 ppm Sn and 0.37 to 4.84 ppm Ag. Warner and others (1988) also collected samples of greisen in the Lime Peak area that contain up to 7100 ppm Sn, as well as locally anomalous concentrations of arsenic, beryllium, boron, columbium, copper, gold, iron, lead, lithium, manganese, silver, strontium, tungsten, uranium and zinc.

**Alteration:**

Deuteric: tourmalization; hydrothermal: chloritization, sericitization, silicification.

**Age of mineralization:**

Mineralization is related to Tertiary and/or Upper Cretaceous granitic plutons.

**Deposit model:**

Sn Greisen (Cox and Singer, 1986; model 15c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

15c

**Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:**

The name 'Lime Peak' has been changed to 'Rocky Mountain' on recent topographic maps; however, most literature refers to the peak as 'Lime Peak'.

**References:**

Wilson and Shew, 1981; Foster and others, 1983; Menzie and others, 1983; Burton and others, 1985; Menzie and others, 1986; Nokleberg and others, 1987; Smith and others,

1987; Warner and others, 1988.

**Primary reference:** Burton and others, 1985.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 06/22/98

**Site name(s):** Unnamed (near Mastodon Dome)

**Site type:** Occurrence

**ARDF no.:** CI080

**Latitude:** 65.429

**Quadrangle:** CI B-3

**Longitude:** 145.348

**Location description and accuracy:**

This occurrence is location no. OFR 361, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is at the top of Mastodon Dome.

**Commodities:**

**Main:** Au

**Other:** Ag

**Ore minerals:** Pyrite

**Gangue minerals:** Quartz

**Geologic description:**

Quartz veinlet in brecciated quartzite contains disseminated pyrite and carries 10 ppm Ag and 0.15 ppm Au.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:****Additional comments:****References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (near Porcupine Dome)

**Site type:** Prospect

**ARDF no.:** CI081

**Latitude:** 65.535

**Quadrangle:** CI C-4

**Longitude:** 145.496

**Location description and accuracy:**

The location is the site of a sample of a small quartz vein described in U.S.G.S. OFR 84-479, Plate 1, No. 2FR2036 (Foster and others, 1984). Porcupine Dome is located approximately 3 miles east of Pinnell Mountain.

**Commodities:**

**Main:** Au

**Other:** Ag, Sn

**Ore minerals:** Arsenopyrite (?), cassiterite, gold, silver

**Gangue minerals:**

**Geologic description:**

Quartz veins that cut metamorphic rocks carry Au, Ag and cassiterite (Cobb, 1976, p. 53, [OFR 76-633]). There are no known granitic rocks in the area. A sample of iron-stained quartzite containing a small quartz vein carrying arsenopyrite(?) had 3.0 ppm Au, 1.0 ppm Ag. Nearby samples are anomalous in tin (W.D. Menzie, USGS 1982-83 field notes; Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface sampling only.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Mertie, 1938; Berg and Cobb, 1967; Burand, 1968; Cobb, 1972, MF-391; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Unnamed (near Table Mountain)

**Site type:** Occurrence

**ARDF no.:** CI082

**Latitude:** 65.454

**Quadrangle:** CI B-4

**Longitude:** 145.892

**Location description and accuracy:**

The location is the site of sample OFR 3103a, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately one half mile NE of Table Mountain along the Pinnel Mountain trail, NE1/4 NE1/4 sec. 9, T. 7 N., R. 9 E.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

0.25 ppm Au was detected in a felsic dike (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**



**Reserves:****Additional comments:**

See also Table Mountain, ARDF no. CI057.

**References:**

Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (northeast of Table Mountain)

**Site type:** Occurrence

**ARDF no.:** CI083

**Latitude:** 65.458

**Quadrangle:** CI B-4

**Longitude:** 145.861

**Location description and accuracy:**

The location is the site of sample no. 3136, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 2 miles NE of Table Mountain along the Pinnel Mountain trail.

**Commodities:**

**Main:** Sn, W

**Other:** Au, Zn

**Ore minerals:** Unknown

**Gangue minerals:**

**Geologic description:**

Significant Sn, W and Zn geochemical values were detected in calc-silicate rocks. Bedrock is mainly quartz-mica schist intruded by felsic igneous rock (Menzie and others, 1983). Four samples of calc-silicate rock contained 70-150 ppm Sn, up to 500 ppm W, 300-700 ppm Zn, and a trace of Au in one sample (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Contact metamorphic tin-tungsten-zinc deposit.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken. Staked as Dolly 368 claim block.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Menzie and others, 1983; Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed (or upper Deadwood Creek)

**Site type:** Occurrence

**ARDF no.:** CI084

**Latitude:** 65.449

**Quadrangle:** CI B-2

**Longitude:** 144.922

**Location description and accuracy:**

The location is the site of sample 3MZ1, plate 1, of U.S. Geological Survey Open-File Report 84-479 (Foster and others, 1984). It is approximately 8 miles upstream of the Deadwood Creek/Steese Highway intersection, on the southern side of the creek valley.

**Commodities:**

**Main:** Au

**Other:** Ag

**Ore minerals:** Arsenopyrite (?)

**Gangue minerals:**

**Geologic description:**

This sample is from a 75- to 100-foot wide N 60 E-trending breccia zone in quartzite. The zone contains quartz veinlets one-eighth inch to 1 inch wide. Possible arsenopyrite found in quartz boxwork; samples of the brecciated quartzite contain 0.7 ppm Au and 1.0 ppm Ag (Foster and others, 1984).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Auriferous quartz veins in brecciated quartzite.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Menzie and others, 1983; Foster and others, 1984.

**Primary reference:** Foster and others, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Unnamed skarn, near Lime Peak (Rocky Mountain)

**Site type:** Occurrence

**ARDF no.:** CI085

**Latitude:** 65.628

**Quadrangle:** CI C-6

**Longitude:** 146.653

**Location description and accuracy:**

The location is the site of samples of skarn and greisen taken by Burton and others (1985). Lime Peak, also known more recently as 'Rocky Mountain,' is approximately 58 miles northeast of Fairbanks in the White Mountains. There is no road access to the area. The Steese Highway is 30 miles to the southeast and existing winter trails extend from it into the area.

**Commodities:**

**Main:** Sn

**Other:** Ag, U, W, Zn

**Ore minerals:** Pyrrhotite, scheelite(?), unknown Sn mineral

**Gangue minerals:**

**Geologic description:**

Anomalous metal concentrations in rock samples collected from the Lime Peak area are associated with two styles of mineralization: skarn, developed near the contact zone of the Lime Peak pluton; and greisen, developed within the Lime Peak pluton (Burton and others, 1985, p. 15). Samples of skarn, collected from near the northern and southeastern intrusive contacts contain elevated to anomalous concentrations of tin and tungsten. The highest values were detected in iron-stained, magnetite-pyrrhotite-pyroxene skarn rubble, with one sample containing 220 ppm Sn and 100 ppm W (Burton and others, 1985, p.15). Smith and others (1987), analyzed bulk samples of calc-silicate rocks in this area with resulting grades of 0.003 to 0.03 oz/ton Sn, 0.03 to 0.1 oz/ton Ag, 0.01 to 0.03 % Cu, and 0.03 to 0.8 % Zn. Because of the low abundance of carbonate rocks in the area and the considerable distance from known mineralizing granite units, Smith and others (1987) conclude that the Lime Peak area skarns/calc-silicate rocks are not of current or likely future economic interest.

**Alteration:**

Fe-rich skarn

**Age of mineralization:**

Mineralization is related to Tertiary and/or Upper Cretaceous granitic plutons.

**Deposit model:**

Sn skarn and Sn greisen (Cox and Singer, 1986; model 14b and 15c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

14b and 15c

**Production Status** None**Site Status:** Inactive**Workings/exploration:**

Surface samples taken.

**Production notes:****Reserves:****Additional comments:****References:**

Menzie and others, 1983; Burton and others, 1985; Nokleberg and others, 1987; Smith and others, 1987.

**Primary reference:** Burton and others, 1985; Smith and others, 1987.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s):** Unnamed; Western Crazy Mountains

**Site type:** Occurrence

**ARDF no.:** CI086

**Latitude:** 65.791

**Quadrangle:** CI D-4

**Longitude:** 145.533

**Location description and accuracy:**

This occurrence is location no. 3, on figure 4, of U.S. Bureau of Mines Open-File Report 213-84 (Barker, 1984). It is along Preacher Creek, on the west side of the valley between West Crazy Mountains and East Crazy Mountains.

**Commodities:**

**Main:** Cr

**Other:**

**Ore minerals:** Chromite (?)

**Gangue minerals:**

**Geologic description:**

The western Crazy Mountains are composed of a complexly faulted succession of predominantly clastic, weakly metamorphosed sedimentary rocks. They have either been intruded by or are in fault contact with mafic sills, dikes, and at least several small intrusive, stock-like bodies (Barker, 1984, p. 6). The western Crazy Mountains are bounded on the south by the prominent Preacher Creek Fault (Weber and Foster, 1980), a splay of the Tintina Fault.

A silicified chert-pebble conglomerate exposed on a hillside overlies an altered zone inferred to be a thrust fault. Disseminated grains in the silica matrix were tentatively identified as chromite, and make up about 1 percent of the conglomerate. Petrographic examination indicated that sericite in the matrix and halos of fuchsite (chrome mica) around the chromite grains have developed as alteration products (Barker, 1984, p. 13, 14). Analysis shows 2000 ppm Cr (Barker, 1984, p. 15).

**Alteration:**

**Age of mineralization:**

**Deposit model:**



**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** None

**Site Status:** Inactive

**Workings/exploration:**

Surface samples taken.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Barker, 1984.

**Primary reference:** Barker, 1984.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s):** Van Curlers Bar (Middle Fork Chena River)

**Site type:** Mine

**ARDF no.:** CI087

**Latitude:** 65.032

**Quadrangle:** CI A-3

**Longitude:** 145.43

**Location description and accuracy:**

The coordinates are for Van Curlers Bar along the Middle Fork of the Chena River. Placer claims extend along the Middle Fork of the Chena River from about 145 00 00 to 145 35 00 W long., but most mining was at or near this location.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The bedrock immediately beneath the Van Curlers Bar is described by Foster and others (1983) as phyllite, calcareous phyllite and marble. The headwaters of the Middle Fork of the Chena River, however, are underlain by pelitic schist. Placer gold mining activity was reported in 1912, 1921, and 1927 to 1940, and various mining and/or prospecting occurred up to 1981 (Menzie and others, 1983). A small dredge operation resulted in moderate production for many years prior to 1963, but details are lacking (Cobb, 1973, p. 129, [B 1374]).

**Alteration:**

**Age of mineralization:**

**Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

A dredge operated at Van Curlers Bar, and hydraulic methods have been used. Mining activity was reported in 1912, 1921, and 1927 to 1940, and there was various mining and/or prospecting up to 1981 (Menzie and others, 1983).

**Production notes:**

A small dredge operation resulted in moderate production for many years prior to 1963, but details are lacking (Cobb, 1973, p. 129, [B 1374]).

**Reserves:**

**Additional comments:**

**References:**

Ellsworth, 1912; Ellsworth and Davenport, 1913; Cobb, 1973, B 1374; Cobb, 1976, OFR 76-633; Menzie and others, 1983; Foster and others, 1983.

**Primary reference:** Menzie and others, 1983.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/09/98

**Site name(s): Wietchy Prospect****Site type:** Prospect**ARDF no.:** CI088**Latitude:** 65.537**Quadrangle:** CI C-4**Longitude:** 145.51**Location description and accuracy:**

This prospect is located along the left fork, right limit of an unnamed creek directly north of Porcupine Dome in the SE1/4 NE1/4 sec. 8, T. 8 N., R. 11 E. This creek is unnamed on the U.S. Geological Survey map, but it is commonly known as Dome Creek. The creek labeled as Dome Creek on the U.S. Geological Survey Circle C-4 quadrangle map is incorrectly labeled; it has been referred to as West Dome Creek in some reports (Freeman and Adams, 1989, p. 12).

**Commodities:****Main:** Au**Other:** Ag**Ore minerals:** Gold**Gangue minerals:** Quartz**Geologic description:**

Mineralization in the area occurs in quartz veins, stockworks, and breccia hosted by intermediate intrusives, metaquartzite, pelitic calc-schist and metavolcanic schist of the Bonanza Creek sequence. Stockwork silicification and quartz-sericite-sulfide alteration are developed on the north flank of Porcupine Dome (Freeman and Adams, 1989).

Hand trenching completed in 1989 and subsequent years released float boulders bearing free gold. The gold in rocks is associated with silver, arsenic, lead, antimony and zinc. Fire assay results from vein and stockwork mineralization average 2.96 ounces of gold per ton with a high value of 23.4 ounces of gold per ton. Exploration along strike of mineralization revealed a honey-comb stockwork and white quartz breccia similar to those on Porcupine Dome (Freeman and Adams, 1989).

**Alteration:**

Disseminated sulfide, sericite.

**Age of mineralization:**

**Deposit model:**

Polymetallic gold-quartz veins and stockworks.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status** Undetermined

**Site Status:** Active

**Workings/exploration:**

Hand trenching completed in 1989 and subsequent years released float boulders bearing free gold. The gold in rocks is associated with silver, arsenic, lead, antimony and zinc. Fire assay results from vein and stockwork mineralization average gold 2.96 ounce of gold per ton with a high value of 23.4 ounces of gold per ton. Exploration along strike of mineralization revealed a honey-comb stockwork and white quartz breccia similar to those on Porcupine Dome (Freeman and Adams, 1989).

**Production notes:****Reserves:****Additional comments:**

Vein and stockwork mineralization on the Weitchy Prospect represents a high grade, moderate tonnage exploration and development target (Freeman and Adams, 1989).

**References:**

Mertie, 1938; Burand, 1968; Freeman and Adams, 1989.

**Primary reference:** Freeman and Adams, 1989.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

**Site name(s): Willow Creek****Site type:** Mine**ARDF no.:** CI089**Latitude:** 65.4**Quadrangle:** CI B-4**Longitude:** 145.672**Location description and accuracy:**

The location is the junction of Willow Creek and Birch Creek. Willow Creek empties into Birch Creek several kilometers above the mouth of the North Fork. Willow Creek is accessible where it crosses the Steese Highway. The creek has been mined at one unknown location on a very small scale.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Bedrock in the area is the Upper Schist unit described by Wiltse and others (1995) as variably garnetiferous, pelitic quartz-muscovite schist, muscovite-quartz schist, and chlorite-quartz-muscovite schist, along with distinct intervals of garnetiferous, calcareous albite-porphyroblastic muscovite-chlorite schist.

The creek has been mined at one unknown location on a very small scale. The creek valley is narrow, steep-sided, and contains only small quantities of gravel that will yield little gold (Yeend, 1991, p. 31).

**Alteration:****Age of mineralization:****Deposit model:**

Placer gold deposit (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status** Undetermined

**Site Status:** Inactive

**Workings/exploration:**

The creek has been mined at one location on a very small scale (Yeend, 1991, p. 31).

**Production notes:**

Mining has been reported (see Workings/exploration); however, amount of production is unknown.

**Reserves:**

**Additional comments:**

**References:**

Yeend, 1991; Wiltse and others, 1995; Lampright, 1996.

**Primary reference:** Yeend, 1991.

**Reporter(s):** C.J. Freeman, J.R. Guidetti Schaefer, A.S. Clements (Avalon Development Corporation)

**Last report date:** 09/14/98

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